Gas Journal

DECEMBER, 1958 | Only Magazine Edited Exclusively for the Gas Distribution Industry

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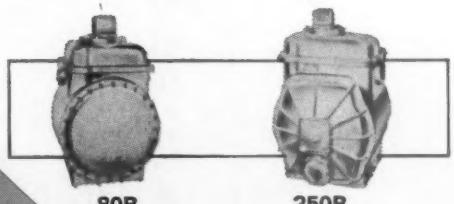

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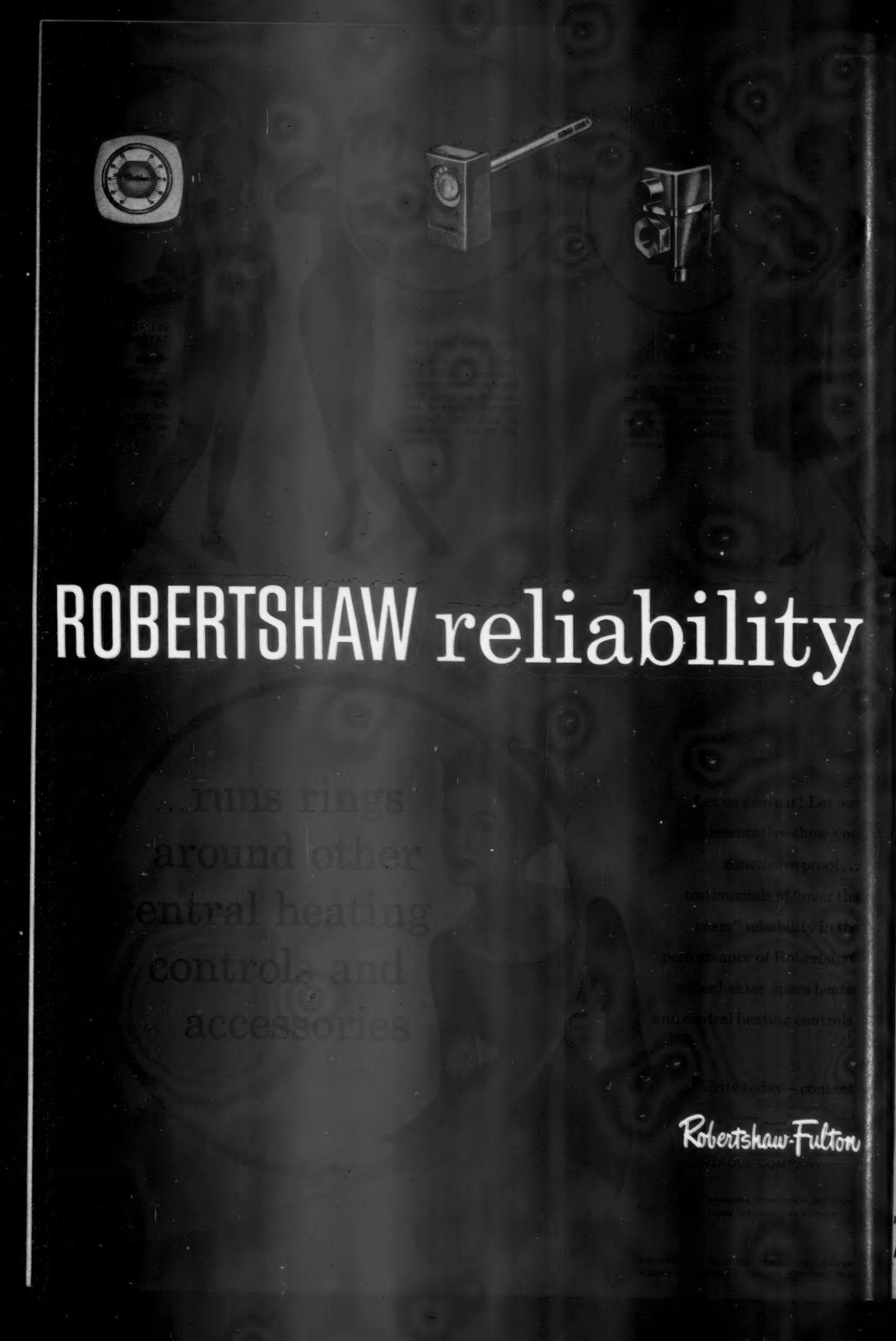
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American Gas Journal®

ONLY MAGAZINE EDITED EXCLUSIVELY FOR THE GAS DISTRIBUTION INDUSTRY

December, 1958 **100th Year of Publication** Vol. 185, No. 13

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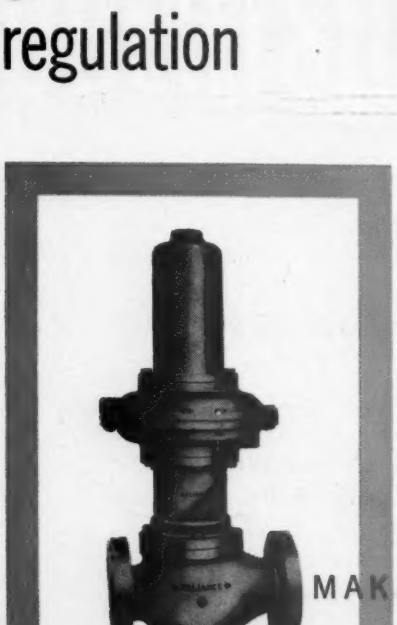

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RELIANCE REGULATOR DIVISION
ALHAMBRA, CALIFORNIA

American Gas Journal

Established July 1, 1859

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Mcf

Fresh New Start. That's the prospect for the Upper Mississippi Valley struggle that came to an end October 31 when the FPC denied all competing proposals in the Midwest case, with "profound regret," bringing to a close nearly three years of haranguing. **Scoreboard reads:** No hits, no runs, all errors. Really big loser: The upper Midwest, which is starved for natural gas. *Midwestern Gas Transmission* went down on strikes — "doubtful" economic feasibility, no Canadian gas supply, and proposed sales directly to steel companies in the Chicago area, termed "not in the public interest." *Northern Natural* was counted out on gas supply and rates. *Michigan-Wisconsin* lost out on grounds of economic feasibility. Related application by Tennessee Gas Transmission was also denied. Earlier participants in the free-for-all — Natural Gas Pipeline Company, Colorado Interstate, Pacific Northwest — withdrew before the FPC countdown reached zero. FPC left the door ajar for new applications— and the response was quick. Midwestern and Tennessee filed new, companion applications on November 4; Northern Natural advised FPC it would file new application shortly to serve part of the region debated earlier. Michigan-Wisconsin plans to stay in the game, too.

Joining of forces by two companies proposing to import gas from western Canada to the Pacific Coast area may expedite approval by Canadian authorities on gas exports from Alberta. Alberta and Southern Gas Company and Westcoast Transmission Company have agreed to joint construction and use of a single 105-mile, 36-in. line from southern Alberta to Kingsgate, British Columbia, to cost $40,000,000. Both firms would operate independently buying gas from Alberta producers and marketing in the U.S. New line would be operated by Alberta Natural Gas Company, in which both firms will have equal stock interest.

Pennsylvania public utility firms must pay cost of relocating facilities when necessitated by bridge and highway construction, the Pennsylvania State Supreme Court has ruled. "Utilities," said the court, "have no property rights in the highway and can be ordered by the state or municipal agency to relocate their facilities at their own expense."

Independent producers — on whom the industry depends for most of its gas supply — are facing almost chaotic conditions because of a lack of legislation to provide them relief from utility type regulation, noted Glenn W. Clark, INGAA president, addressing recent A.G.A. convention. Gas to replace produced reserves is costing more, and without new reserves — *dedicated willingly to interstate markets* — gas industry progress may come to a halt, he pointed out. INGAA, in near future, will have a "policy committee" to work out some type of relief within framework of the Natural Gas Act. Recommended would be a greater rate of return; current 6 percent return is insufficient these days.

Increasing diversification of Arkansas Louisiana Gas Company is reflected in the newly acquired "family" members — Reynolds Gas Regulator Company of Anderson, Indiana, and the buggy manufacturing division of Wagon Works, Inc., of Huntington, Indiana. Reynolds, 38-year-old firm and a leading producer of regulators and gas control devices, was bought for $1,000,000 "solely as an investment." Reynolds will continue to serve gas industry as in past. Plans, not definite, are to make it a division of the gas company's wholly owned subsidiary, Arkla Air Conditioning Corporation. Manufacture of the Conestoga and "prairie schooner" type horse-drawn wagons, etc., will be moved to a new plant in Arkansas, also as division of Arkla. Big market for horse-drawn vehicles is result of interest created by TV and movie westerns.

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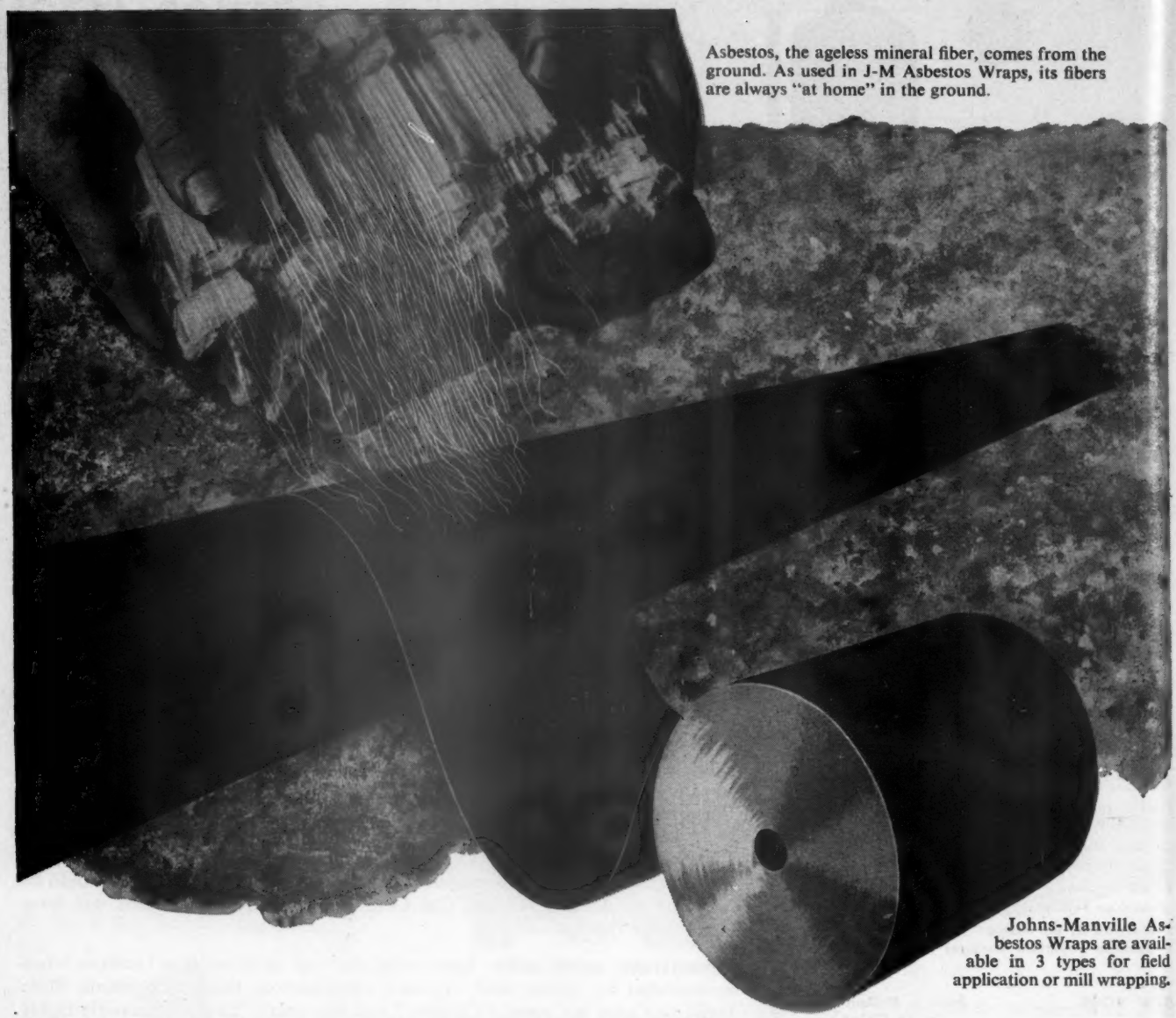

Asbestos, the ageless mineral fiber, comes from the ground. As used in J-M Asbestos Wraps, its fibers are always "at home" in the ground.

Johns-Manville Asbestos Wraps are available in 3 types for field application or mill wrapping.

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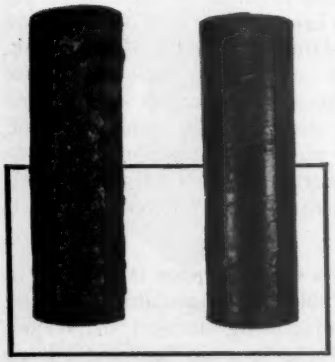

(Left) Plasticized enamel without J-M Asbestos Wrap did not stand up in soil stress tests. Coating had been applied to 18" sections of 4" O.D. pipe buried in bentonite clay which was then subjected to a series of wetting-downs and dryings.

(Right) Plasticized enamel with J-M Asbestos Wrap shows the full effectiveness of shielding action provided. Sample was in excellent condition after 28 wetting-drying cycles.

Obviously, pure stone can't be fabricated into sheet or roll form for pipeline enamel protection. But you can get the closest thing to it—J-M Asbestos Wrap, made of a lasting mineral fiber that's completely at home underground and uniquely conditioned by nature not to rot or decay.

In addition to being ageless, asbestos fibers are unusually strong and tough. As used in J-M Wraps, the fibers are felted, then impregnated with either coal tar or asphalt saturant to form, virtually, a flexible covering of stone. These "stone-like" qualities provide the durable shielding needed to protect enamels from earth loads, soil movement, other forces which weaken coatings and permit pipe corrosion to set in.

Extensive research and field tests conducted by a leading firm of consulting engineers have demonstrated these long-lasting protective values of J-M Wraps: "Asbestos Wraps offer the most effective single protection against damage—prolong the working life of pipeline enamels."

Pipeline engineers are invited to write for their own copy of this report PP-34A, a *3-Point Study of Pipeline Coatings and Wrappers*, at no cost or obligation.

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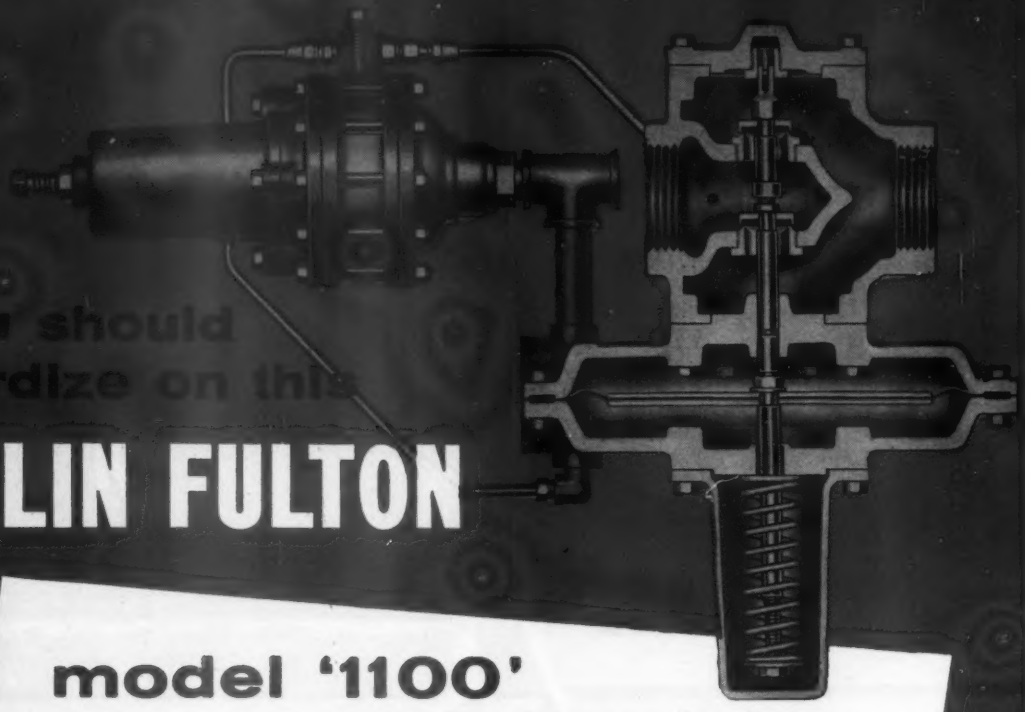

model '1100' gas regulator

Let's not beat around the well head, this Model "1100" is the most versatile gas regulator in the business. It gives a wider range of flow control in industrial, commercial or distribution installations. Just look at these points of superiority:

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24,000 cfh at 10 psi to ounces; 114,000 at 100 psi. Body contoured for flow

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Coming Events

IN THE GAS DISTRIBUTION INDUSTRY

December

1- 3 American Society of Refrigerating Engineers, semi-annual meeting, Hotel Roosevelt, New Orleans, Louisiana.
1- 4 National Warm Air Heating and Air Conditioning Association, annual convention, Cleveland, Ohio.
7- 9 Institute of Appliance Manufacturers, year-end meeting, Statler Hilton Hotel, Dallas, Texas.
10-11 National Construction Industry Conference, sponsored by Armour Research Foundation, Hotel Sherman, Chicago, Illinois.
22 NEGA, operating division, Hotel Statler, Boston, Massachusetts.
26-30 American Society of Heating and Air Conditioning Engineers annual meeting and exposition, Philadelphia, Pennsylvania.
29 NEGA, accounting division, Hotel Statler, Boston, Massachusetts.
30 Rocky Mountain Gas Association, annual meeting, Denver, Colorado.

January 1959

13-14 A.G.A.-PCGA public relations conference, Hotel Westward Ho, Phoenix, Arizona.
16 Oklahoma Utilities Association, accounting section, Biltmore Hotel, Oklahoma City, Oklahoma.
18-22 National Association of Home Builders, convention and exposition, Chicago, Illinois.
19-20 Industrial Heating Equipment Association, Hotel Cleveland, Cleveland, Ohio.
22 NEGA, operating division, Statler Hilton, Boston, Massachusetts.
26-30 American Society of Heating & Air Conditioning Engineers, annual meeting and exposition, Philadelphia, Pennsylvania.
29 NEGA, accounting division, Statler Hilton, Boston, Massachusetts.
29-31 A.G.A. Home Service Workshop, Jung Hotel, New Orleans, Louisiana.

February

18 NEGA, street department supervisors' group of operating division, Bancroft Hotel, Worcester, Massachusetts.

March

5- 6 SGA distribution management round table conference, Jung Hotel, New Orleans, Louisiana.
6 SGA accident prevention round table conference, Jung Hotel, New Orleans, Louisiana.
9-11 Mid-West Gas Association, annual meeting and convention, Hotel Ft. Des Moines, Des Moines, Iowa.
16-20 NACE, Sherman Hotel, Chicago, Illinois.
19-20 NEGA, annual meeting, Hotel Statler, Boston, Massachusetts.
26-27 Oklahoma Utilities Association, annual convention, Mayo Hotel, Tulsa, Oklahoma.

April

1- 3 GAMA, annual meeting, Americana Hotel, Bal Harbour, Florida.

May

5- 7 14th Purdue Industrial Waste Conference, Prude Memorial Union Building, LaFayette, Indiana.

Joe Roughneck's solid source of supply...

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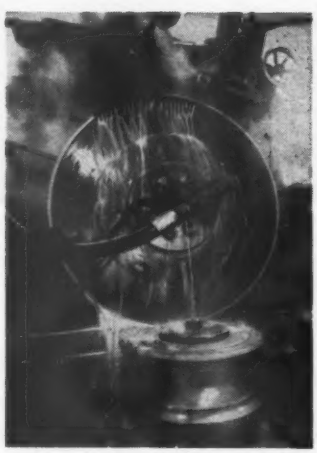

Wheel of plentyl Welding pipe by electric resistance weld process. Lone Star API pipe is fully normalized.

Joe Roughneck, of course, is symbolic of the men who have made the fabulous oil and gas industry tick .. and Lone Star Steel's huge completely integrated plant is right in the middle of Joe's workshop. Lone Star pipe is quality-controlled from mining of ore to finished pipe. In addition to operating day and night to supply Joe's pipe needs .. Lone Star has recently completed new and even larger facilities.

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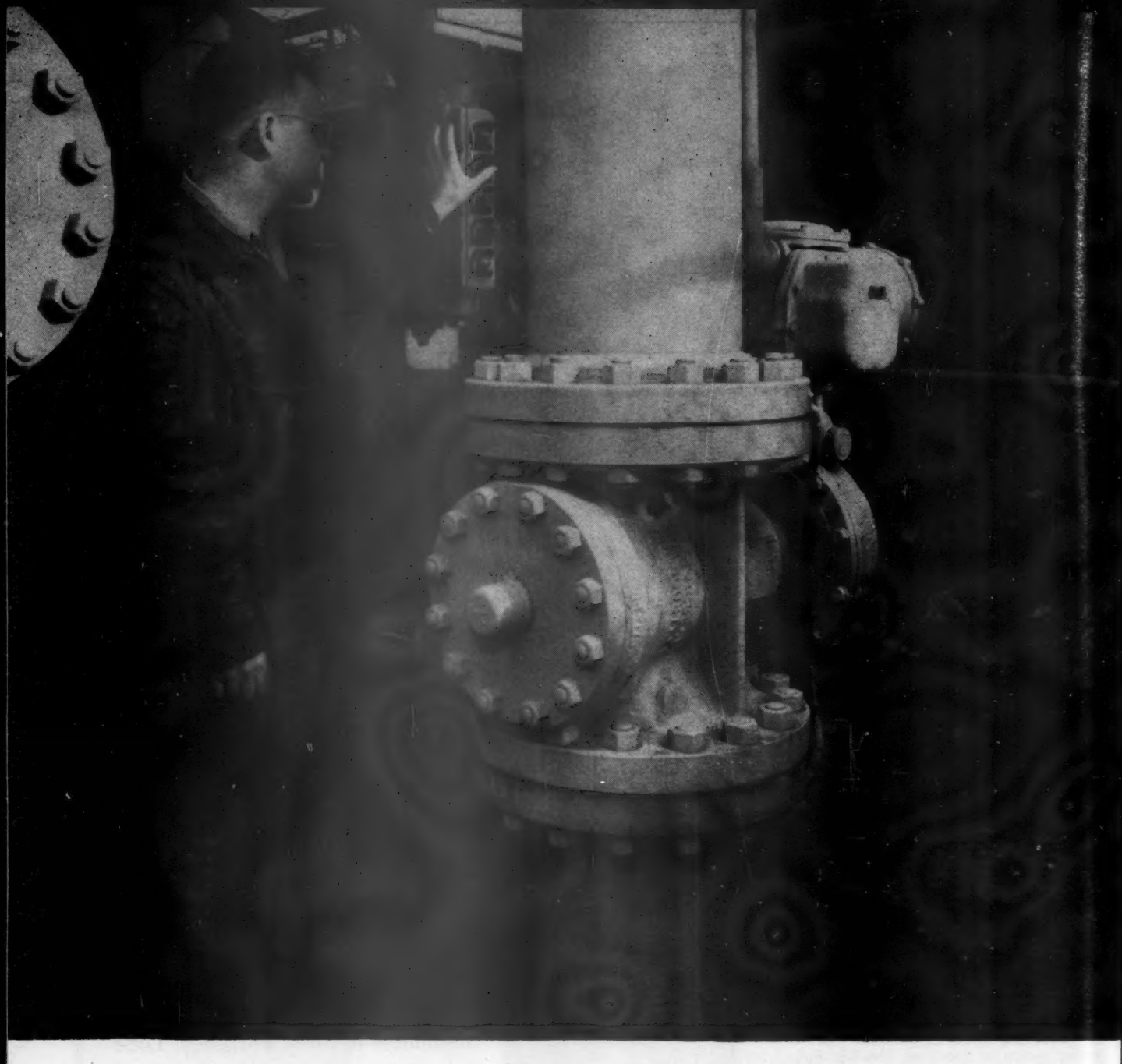

THIS BUTTON COULD BE MILES AWAY

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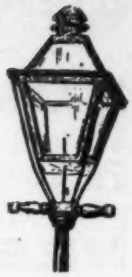
Profile by Gas Light



Chester L. May: "Mr. Gas"

FROM GAS LIGHT SALESMAN as a young man to chairman of the board of a firm that is successfully selling a modern version of the same appliance is a lot of territory to cover in 47 years.

For Chester L. May, the journey from Lima, Ohio, where he sold gas lights as a youth to head of Arkla Air Conditioning Corporation is the map of the man's productive and illustrious career in the gas utility industry.

His new task of heading a youthful and aggressive firm serving the gas utility industry is a natural climax to nearly five decades of service. Election to the Arkla post came on the heels of his retirement as senior vice president of Lone Star Gas Company, of whose family he was a member for 41 years, including service as vice president since 1942 and senior vice president since 1954.

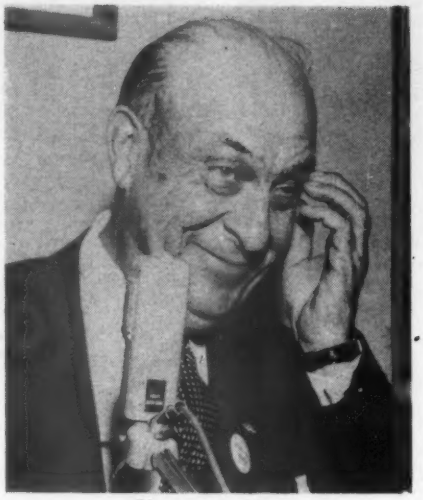
"Mr. Gas," as he has been dubbed by the Southern Gas Association, is a noted authority on gas distribution properties. For Lone Star, he directed gas distribution operations in 445 communities in Texas and Oklahoma prior to his retirement.

Dynamic, frank, straight-forward, enthusiastic, tenacious — these are terms his colleagues use to describe him. Evidence that he is all of this—and more—is found in the mark he has made on the gas utility industry.

He has been a leader in the continuing fight against legislation that he thought burdensome to the gas-consuming public as well as to the gas industry as a whole. Patiently and painstakingly, he directed Lone Star's organization in gathering statistics to prove the fairness of the company's rates. He personally appeared before scores of city council meetings and regulatory commission hearings to protect his company from unreasonable rate reductions that would destroy its high standards of service.

Chester May's strong convictions about the gas industry began with his first job — selling gas lights in his hometown. In 1911, he took a job cleaning gas meters with a wire brush, soon became an inspector for a gas company at Springfield, Ohio, where he learned about gas leakage, how to correct it, how to inspect meters, and how to formulate standards for gas distribution installations.

When a flood in 1913 swept the



Chester L. May

Miami River Valley in Ohio, all but destroying many gas properties under the supervision of the late Frank L. Chase, young May went to work helping to rehabilitate the facilities. The association with Frank Chase was lasting and fruitful for both.

His work in Texas for Lone Star began as a temporary assignment, making a complete inspection of the company's properties and all other distribution systems served by the company. He had planned to return to Ohio when his work was done.

Meanwhile, his former boss, Chase, had been brought to Lone Star to inspect the company's system and recommend changes to put it in first class working condition. Going over the payrolls, he found May's name. He sent for him, and with little preamble, said: "Chester, I want you to stay here. We are going to build a gas company."

May stayed. He continued his inspection work, trained a staff of 12 men to make complete property inspections on both condition and design, and help "build the gas company." When the Farmers Gas Company was organized in 1921 to build distribution systems along Lone Star's pipeline, Chester May was made general superintendent.

Community Natural Gas Company, organized in 1925, absorbed Farmers Gas Company and Chester May was made general superintendent of the new firm. At Lone Star, Frank Chase was convinced Lone Star could and should build distribution systems to serve other small towns in Texas, and he persuaded Lone Star to institute such an expansion program.

Direct supervision of the work was placed in Chester May's hands. In a five-year period, Lone Star built 200 systems in Texas and Oklahoma—a record in the industry that still stands —with sometimes as many as 15 systems underway simultaneously. Throughout the whole period, Chester May lived with his work night and day, snatching a few hours' sleep in his automobile between jobs.

In 1929, May was elected vice president and general manager of Community Natural Gas Company, and in 1933, vice president and general manager of both Community Natural and Texas Cities Gas Company.

He became president of both firms in 1940, and in 1942, following reorganization of Lone Star Gas Company, was elevated to vice president in change of all distribution operations. He was elected to the board of directors in 1949 and five years later was elected senior vice president.

May's counsel and leadership have extended to various gas industry associations, too, to which he has given unselfishly of his time and talents. He has served as president, chairman of the advisory council, member of the executive committee, and many other important posts in the Southern Gas Association, and was recently awarded an honorary life membership in the association.

Nationally, he has served on the board of directors of the American Gas Association since 1956 and has been a member of numerous important committees.

Helping guide Arkla Air Conditioning Corporation, from his offices in Dallas will keep Chester May busy, to be sure, but he plans to have time for other activities. An avid sportsman, he loves to hunt (for game like moose, bear, deer, and grouse in places like Kenora, Ontario, Canada), fish, and ride horseback. He'll also be busy as a member of the official board of his church, University Park Methodist.

There's also a wide acquaintanceship in the gas industry who'll still be needing him. Chester May is a man with many friends.

"Life is short at best," he notes. "He is to be pitied indeed who has no friends."

WHY BURY MONEY IN NEEDLESS STREET PATCHES?

GREENLEE Hydraulic Pipe Pushers like the one shown below quickly install pipe under streets with a minimum of ditching and backfilling and *no damage to roadbeds or pavement!* A GREENLEE Pipe Pusher cuts job time and costs to a fraction. Can pay for itself on the first job — *usually* does on the first *few* jobs. Model shown pushes 3/4" to 4" pipe about 2 ft per minute with power pump. Larger unit available for larger pipe and concrete sewers. Instead of another useless street repair job, invest the same money in a valuable time-saving, worksaving GREENLEE Pipe Pusher! Write today for free literature.

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Rockford, Illinois

Men At Work

IN THE GAS DISTRIBUTION INDUSTRY

F. G. Fabian

● **F. G. Fabian** has been promoted to president of Dresser Manufacturing Division, Bradford, Pennsylvania. Fabian joined Dresser Manufacturing Division in 1953, and has been general manager since 1955. Prior to joining Dresser, he had been three years with Booz, Allen and Hamilton, management consultants in Chicago.

● **Harry Lasky,** vice president in charge of sales, Pennsylvania Range Boiler Company, has been named chairman of the Water Heater Division of the Gas Appliance Manufacturers Association.

● **John J. Carson,** who headed British Columbia Electric's industrial relations program in Vancouver the past two years, has been appointed vice president of the company. In addition to industrial relations he will also be responsible for employee training, salary administrations, security and medical services for the company.

● **Clayton E. Baird** has been named sales manager and **O. H. Nibbelink,** Waukegan district manager of North Shore Gas Company.

● **Charles W. Brydon** has been appointed controller of Neptune Meter Company responsible for all accounting policies and procedures of the company and its subsidiaries.

● **A. Otis Smith** has been appointed to head Washington Natural Gas' new division of its sales department established to meet the growing need of realtors for gas service information in the Seattle area. His title will be supervisor of realtor relations.

● **Dr. Johnstone S. Mackay** has been promoted to manager, general research, in the research and development department of Pittsburgh Coke & Chemical Company. He was formerly supervisor, process research.

● **Victor Weber,** vice president of Robertshaw-Fulton Controls Company, has received the A.G.A. Distinguished Service Award for his conception of the "Thermal Eye," the first produced "burner with a brain" sold to the public.

● **R. M. McIntyre** has been appointed to the newly created post of market development manager of Southern Counties Gas Company. He formerly served as acting sales manager in the company's Orange County division. **Donald O. Burdick,** sales manager in the Santa Barbara division, will succeed McIntyre as sales manager in Orange County.

● **Howard J. Evans,** chief engineer, central gas products of Rockwell Manufacturing Company's Meter and Valve Division, has been promoted to manager of engineering and research for all gas products. He will supervise the recently expanded engineering facilities at Rockwell's DuBois, Pennsylvania, Meter Division.

● **George C. Williams** has been appointed to the newly created post of director and general counsel of The East Ohio Gas Company. He will be in charge of all legal matters for the company. He was formerly associated with Consolidated Natural Gas Company, parent firm of East Ohio.

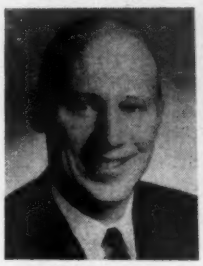
● **Max M. Ulrich** has been appointed general manager of advertising and industry research for Consolidated Edison Company of New York, Inc.

● **Martin J. Sherry** has been appointed to the Industrial Controls Division of General Controls Company as account executive.

● New assignments for several key personnel in the accounting department of Southern Union Gas Company included **Frank D. Jernigan,** former director of general and special accounting, who has been transferred to the recently enlarged rate and special projects department. Succeeding Jernigan is **Everitt Baker** former chief accountant. **George S. Davis,** formerly with Peat, Marwick, Mitchell and Company of Dallas has been named to fill the post vacated by Baker.

F. D. Jernigan

Everitt Baker



G. S. Davis

W. F. Wright, Jr.

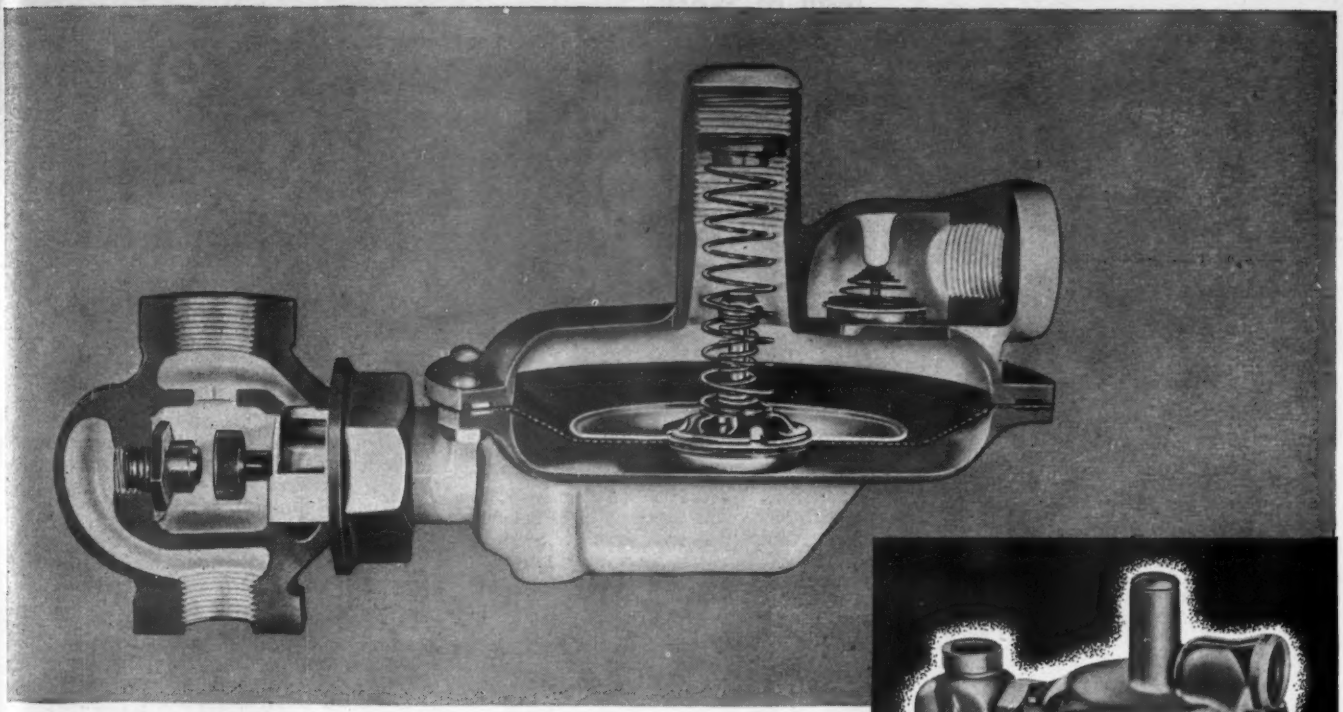
● **W. F. Wright, Jr.** has been appointed utilization manager for Southern Union Gas Company, responsible for coordinating company's efforts to develop large-scale gas utilization business, including industrial air conditioning, irrigation, and similar projects.

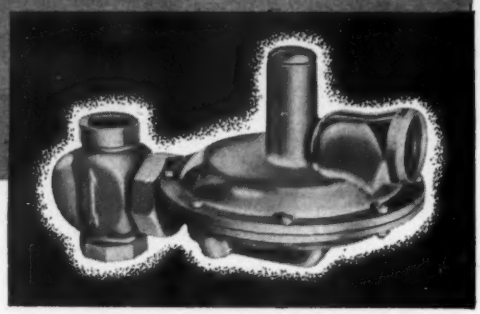
● **Ernst Karl Thiele,** research engineer, Selas Corporation of America, was honored recently in commemoration of 50 years of employment with the company.

● **Edward P. Fleischer** has been appointed assistant to the president of Consolidated Electrodynamics Corporation. He was formerly manager of systems and procedures.

J. A. Gallagher

Joseph A. Gallagher, director of publicity of Public Service Electric and Gas Company, Newark, died November 1 in Baltimore. He had been with Public Service 34 years, and director of publicity of the company since December 1945.





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For full information on Reliance Regulators, consult your American Meter Representative

New Reliance Full-Relief Regulators provide maximum safety under the most severe conditions. Relief-valve vents full capacity even if regulator fails wide open, preventing dangerous downstream pressure. Compact and easy to install indoors or outdoors, these new Reliance Full-Relief Regulators are sturdily built to give years of trouble-free service.

UNION-TYPE removable pipe section installs easily with regulator body swiveled at any angle to pipe—no alignment with the diaphragm section required. Available in a wide variety of models, Reliance Series 1400 and 1500 Regulators embody many exclusive and optional safety features.

Series 1500—Meter Bar available with 6-inch and 11¼-inch centers. Provides a solid support for the meter.

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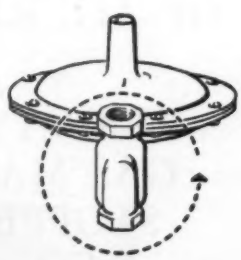
MAXIMUM INLET PRESSURE 125 PSI



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Men at Work

● **J. S. Bullington** has joined Northern Natural Gas Company as senior industrial representative in the department of marketing, economic research, and area development. He was director of the industrial development division of Oklahoma State Department of Commerce and Industry prior to accepting the position with Northern.

● **Robert C. Kumler,** former advertising manager for Oklahoma Natural Gas Company, Tulsa, has been named vice president of the Beals Advertising Company, Oklahoma City.

● San Diego Gas & Electric Company has announced the following personnel changes: **William H. Neild** has been appointed industrial gas sales engineer, succeeding **E. H. "Gene" Adler** who has retired. Neild was formerly sales engineer in the industrial gas sales department. **Donald W. Pine** has been appointed commercial gas sales supervisor succeeding **Otto Ketelsen,** who recently retired. **David F. Curtis,** former sales representative in the commercial lighting department, has been appointed claims agent succeeding **C. W. Fitzpatrick** who also retired.

● Washington Natural Gas Company recent promotions include: **Avery W. Willis, Jr.,** former assistant director of personnel, who will fill the newly created post of assistant to the vice president in charge of operations, and **Willis H. Cook,** who will assume the duties of assistant director of personnel.

● Commonwealth Services has announced two recent additions to their staff: **William King,** formerly with Southern Union Gas, has joined the firm as a consultant on accounting systems, procedures, and machine data processing. **Howard E. Clark,** formerly industrial relations director of Albany Felt Company, has joined the industrial relations department as a consultant in the areas of organization development, union-management relations, wage and salary administration, and other personnel problems.

● **Fred E. Weldon,** sales manager, has been appointed vice president in charge of eastern sales of General Controls Company.

● **Charles T. Burklow** has been appointed representative for Maxitrol Company in the Southeastern area. He was formerly with Boiler Supply Company of Nashville.

● **Charles F. Hill** has been appointed general manager of the industrial division of Massey-Ferguson, succeeding **Charles J. Davis,** who is relinquishing his responsibilities as general manager. Davis will continue to be associated with the division until present planning of programs to be applied in 1959 is completed.

● **John T. Cunningham** has joined Commonwealth Services, Inc., as consultant in the fields of public and stockholder relations. He was formerly public relations account supervisor with Morey, Humm & Warwick, Inc.

● **Charles D. Mitchell** has been appointed district sales manager for American Meter Company's New England territory.

● **William J. King** has been appointed sales manager of Peoples Gas System's West Coast Division, Tampa. He was formerly sales representative in the Sun Coast area for L.P.G. Equipment Co. In his new post, he will supervise domestic, commercial, and industrial sales of gas and appliances.

W. J. King

● F. H. Maloney has opened a new district office in Chicago, to be headed by **Bob Churnside. Joseph V. Kidd** has joined the firm as sales engineer in the Houston area. He was formerly with Champlin Oil and Refining.

● **Louis A. McGowan,** chief engineer of Rockwell's DuBois, Pennsylvania, gas meter plant, has been named assistant chief engineer for the Barberton Division, manufacturer of lubricated plug valves.

● **H. M. (Hal) Borden** will head Roots-Connersville Blower's new district sales office in Cincinnati, Ohio. The new territory will consist of southern Indiana, southern Ohio, Kentucky, and southern counties of West Virginia.

● Officers of Quebec Natural Gas Corporation have been re-elected at the recent annual meeting of shareholders. Officers are: **Honorable Edouard Asselin,** chairman of the board; **Colonel Maurice Forget,** president; **Kenneth B. Lucas,** executive vice president and general manager; **Paul F. Clarke,** vice president, and **H. A. B. Stuffman,** secretary and treasurer. In addition to Asselin, Clarke, Forget, and Lucas, other directors are: **Albert Langevin, John K. McCausland, Leonard Milano, Horatio R. Milner, Joseph A. Page, Marcel Piche, Frank A. Schultz,** and **Guy Vanier.**

● The Ohio Injector Company has elected **Dana M. Norton** vice president of industrial relations. He was formerly director of industrial relations for Curtiss-Wright Corporation in Michigan.

● **Albert V. Feuerstein, Jr.** has been appointed advertising coordinator responsible for all phases of Philco Corporation's Government and Industrial Division advertising and sales promotion activities.

● William Wallace has announced several personnel changes: **Frank Kohles,** former sales manager of the Metalbestos Division, has been named general sales manager of the William Wallace Company. He formerly directed sales of Metalbestos gas vent pipe and new Metalbestos Chimney; in the new position he will also be responsible for sales of Standard Line Division products. **Walter S. Waddington,** former Standard Line sales representative, has been appointed assistant sales manager of William Wallace in charge of Standard Line sales. **Robert A. McHugh,** former manager of Southern California district for Metalbestos Division and more recently sales manager for company's Standard Line Division, has been appointed assistant to the general sales manager.

This PITT CHEM protected gas main is going underground for the rest of your life!

ONE of the most practical and economical steps you can take to insure against costly distribution line failure is to use the proven protection of quality *coal tar* coatings.

And when it comes to coal tar coatings, more and more gas companies are depending on PITT CHEM Enamels—protection that has been proven over the years on major transmission lines and distribution lines alike. No other material can do a better or more economical job of resisting soil stress and water absorption.

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The new Superior ALUMINUM CASE METERS

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This slow-motion, long-lived meter operates at only 7 revolutions per cubic foot to reduce wear and stay accurate longer. And its simple, horizontal seam construction gives fewer chances for leaks . . . makes maintenance quick and simple. Whether it's adjusting the tangent through the handy access in the top . . . removing the top to grind the valve seat . . . or lifting out the valve table with the entire inner movement to replace the diaphragm, simply loosening a few screws makes everything accessible.

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This modern meter exploits all the time-tested advances in meter technology *plus* the latest manufacturing techniques of Superior's new plant.

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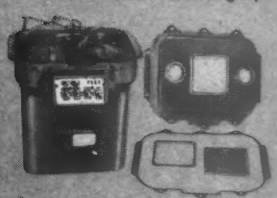
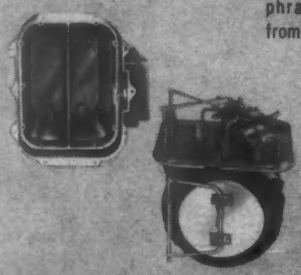
1. Simple, horizontal seam . . . eliminates leakage . . . easier maintenance
2. Easily accessible table . . . just remove the screws holding top



3. Meter top removable without taking off index box
4. Valve seat readily accessible for grinding when top is removed
5. Slow movement; only 7 revolutions per cubic foot
6. Seam gasket stays resilient . . . cork and Buna-N composition
7. Valve table lifts out with entire mechanism



8. Heavy-duty, sintered bronze bearings oil-impregnated for life
9. Flag arrangement gives arm smoother operation and longer life
10. Accurately controlled diaphragm . . . no inaccuracies from deflection
11. Cupped handling lids permit easy and safe carrying
12. Handy access for tangent adjustment and calibration
13. Broad base for solid stacking . . . designed for conveyorized handling
14. Index removable without removing meter

In 250 cfh and 340 cfh sizes to meet most domestic requirements.

Made of malleable iron. Single massive bolt. All sizes, 1/2" to 12" inclusive. For steel, cast iron and Transite pipe.

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...the Coal Tar Tape Coating that Adds Years of Service Life to Gas Lines

No wonder more and more distribution engineers are selecting TAPECOAT products as an important part of their program in fighting underground corrosion! Experience shows that quality protection applied during installation prevents huge maintenance and replacement expense at later dates.

Since 1941 when TAPECOAT originated coal tar coating in tape form, it has proved to be the best protection money can buy for combatting corrosion underground or under water. Lines in service TAPECOATED as far back as 17 years ago show no signs of deterioration – a record of uninterrupted service no other type of tape can match.

TAPECOAT comes in rolls of 2", 3", 4", 6", 18" and 24" widths–sized to the job for protecting pipe, pipe joints, couplings, fittings, tanks, conduit, cable and tie rods. TAPECOAT is both bond and protection in one–easy to apply with the flash of a torch.

Write for brochure today.

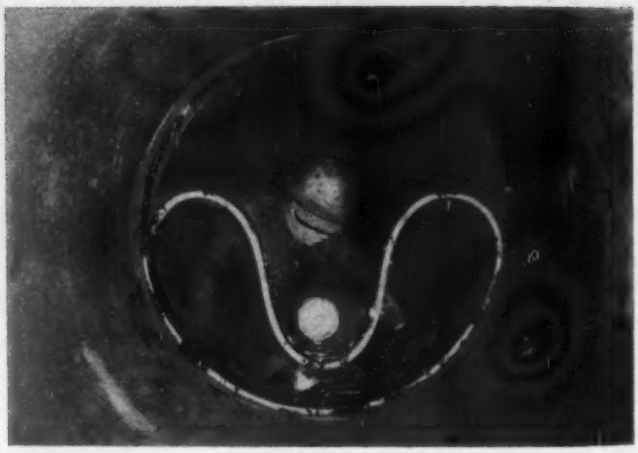
When primer is specified, use TC Primecoat, the compatible coal tar primer.

The TAPECOAT Company

1567 Lyons Street, Evanston, Illinois

Representatives in Principal Cities

This spring steel band, loaded with sealant, is the key to a new method of internally sealing pipe joints on large-diameter gas mains...



Positioned on joint, band is opened by workman; it will press tightly against joint, force sealant into openings, provide tight, gas impermeable seal.

For large diameter pipe . . .

Sealing Pipe Joints by the Internal Spring Band Method

New technique developed by Consolidated Edison utilizes spring steel bands, aluminum foil, and an amazing black plastic sealing material

C. P. Xenis, *Engineering Department*
Consolidated Edison Company of New York, Inc.
New York, New York
and
Dean Hale *Editor, American Gas Journal*

IN NEW YORK CITY, with its plethora of pavement and busy streets, Consolidated Edison has found it expedient to avoid all possible excavations. One result of the continuing search for ways to keep from digging holes in the streets and sidewalks is the **internal spring band method of sealing cast iron pipe joints.**

Whenever joints must be repaired, it is necessary to either externally clamp and seal the joint or seal it by some means from the inside.

Thus this new method of internal sealing of joints satisfies one of the major objectives of Con Ed's engineers — no unnecessary excavating. The other objective, of course, is economy.

On the basis of experience to date, with pipe sizes ranging from 30 to 48-in., costs of repairing and sealing joints have been reduced from one-half to two-thirds over other methods. So far, the company has used this method for 742 joints on 30-in. cast iron mains, 12 joints on 36-in. mains, 526 joints on 42-in. mains, and 1482 joints on 48-in. mains. Currently, more joints are being sealed and plans are being made to seal many more by the method.

Internal Sealing Pioneer

Internal sealing methods have proved practical and economical in Con Ed's gas distribution operations. The company has worked for several years doing development work on its own and has encouraged development work by several manufacturers to perfect internal sealing methods for bell and spigot type cast iron mains—which comprise a large part of the company's gas distribution system.

The method discussed in this article is confined to large pipe sizes — 30 to 48-in. diameter — in which a man can work inside the pipe and perform the various operations required. (*An article on another method used for smaller pipe appeared in the August 1958 issue of* AMERICAN GAS JOURNAL.)

Because of problems inherent in working with the sealing materials involved and problems of workmanship (working inside the pipe is very difficult), it has been necessary to mechanize and improve procedures as much as possible to insure good quality work and effective results.

On the basis of experience and various tests, Con Ed is quite satisfied with the efficiency and economy of the internal spring band method for sealing large joints.

How It Works

To use the method, you have to get into the pipe. One of the beauties of the method is that you need only two openings — one at each end — and these can be spaced as far as 500 ft apart. Compare this to a method of external repair, where you would need a bellhole every 20 to 30 ft.

Sometimes, of course, for practical considerations, excavations for the required openings are closer than 500 ft, depending on conditions encountered. Excavations are made in the street where necessary and an opening cut in the pipe. Occasionally, if a drip cover opening is available, it is utilized.

Joints Must Be Clean

Once the openings are made and work is ready to commence inside the pipe, the first consideration is to clean the inside surface at every joint. This surface must be clean down to the bare metal if at all possible to insure a good bond. The surface may be corroded to rough condition, but this is no problem as long as all loose scale and flakes are removed. At the joint, cleaning is necessary for about an 8-in. width, 4-in. on either side of the joint.

There are several methods of doing this. The one preferred by Con Ed is the use of a cleaning machine consisting of a rotating disc—powered by a compressed air motor — to which are attached cutter wheels. The wheels flail the pipe surface, scraping it clean and blowing away the loose material. This operation takes about 10 minutes per joint. After cleaning, the joint is ready for sealing.

Step-by-Step, How New Method Is Used to Seal Large-Diameter Pipe Joints

(Sequence shows original method; this has been modified—see text of article and other illustrations)

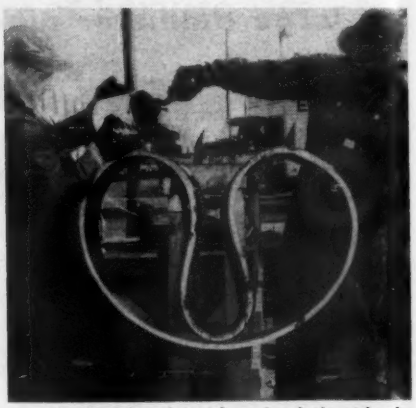
1 Band is adjusted to proper size for pipe diameter.

2 Clamp is then tied in partially folded position.

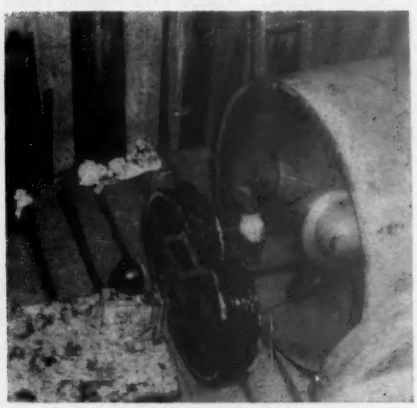
3 Band is now in completely folded position and tied.

4 Catalyst (curing agent) is added to Thiokol compound.

5 Mixing of polymers and catalyst must be thorough.



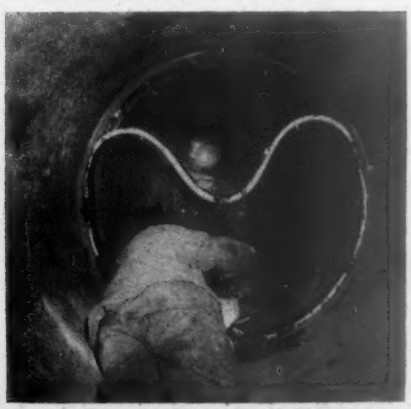
6 Spring band is then loaded with the sealant.



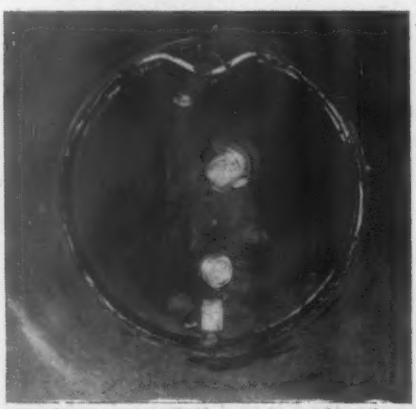
7 Loaded band is placed on dolly for movement in pipe.

8 Special-design dolly transports band to joint being sealed.

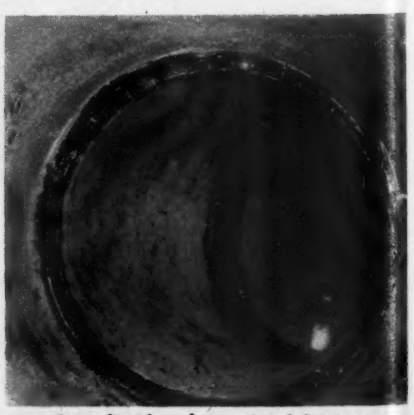
9 Band is positioned on joint by workman.



10 With wires cut, band springs open.



11 Excess sealant is removed, edges smoothed.



12 Completed seals on pipe joints are permanent.

"Pre-fabricated" Bands Replace Field Assembly, Mixing of Sealant

In contractor's shop, aluminum foil — with foam rubber strips attached — is unrolled to length need for spring band.

Band is latched to size and foil strip is placed on outside. Edges are turned under, overlap is taped.

Finished band will be tied in folded position, loaded with sealant, and placed in cold storage. This method makes possible mixing of large quantities of sealant and assembly of "ready-to-use" bands in advance of job requirements. Sealant does not harden when cold. Bands are delivered to job via refrigerated truck; when removed, they begin warming, and curing begins to take place upon application to joints.

Steel Bands

Key to the method is the spring steel band; when opened to a full circle, its diameter is approximately the same size as the internal diameter of the pipe (about ½-in. smaller). The bands are equipped with a latching mechanism so that they may be opened up and used again. The latches also make it convenient to change the diameter of the bands for use in different sizes of pipe. Initially, the bands were riveted and were left in place, but the bands cost money (about $40 each) and "a better way" was found to save these expensive steel bands.

Aluminum Foil to the Rescue

In the method now being used, the outside of the band is covered with a long strip of aluminum foil, to which are attached two narrow strips of foam rubber. This foil liner is wider than the band, and the foil edges are rolled around to the inside of the band, holding the foil liner in place. The overlap is taped together and trimmed for exact fit. Measured over the foam rubber strips, diameter of the band plus foil liner is about ½-in. larger than the pipe ID.

Sealant: All Important

Once the band is lined with the foil and foam rubber strip, it is ready for loading with the sealing material. This material is a compound based on *Thiokol* polysulfide liquid polymers plus a catalyst (curing agent). One of the most important of its many properties is the fact that — once applied to the band — it doesn't come off. This is termed a "thixotropic" property.

The sealant, when cured, is exceptionally strong and is very adhesive. It bonds tightly to both iron and aluminum. It is resilient — an ideal property, since joints can and do move and vibrate, and the sealant is unaffected. In fact, the material's plasticity is great enough to allow stretching up to 1¾-in. before a noticeable change takes place.

The space between the two foam rubber strips is filled with sealant. Once the band is loaded with the sealant, it is collapsed and bound with wire. The band is very stiff and must be wired tightly.

After being folded, the band is then loaded and is ready to be rolled into the pipe. The dolly design is very important. The dolly must be designed to prevent it from tilting while it is being rolled into the pipe.

Placing the Band

Inside the pipe, the band is positioned at the joint to be sealed, the wires are clipped, and the band snaps open almost completely. Usually there is a small space at the top of the band that must be positioned against the pipe wall by hand. Any excess sealant that might ooze out at this point is removed by the workmen. Sealant oozing out at the edges of the strips is smoothed out to give the job a neat appearance.

Sealant is pressed by the steel band into the joint opening; the actual amount of sealant that does the sealing job is about 1/16-in. in thickness. Overall thickness of the sealant plus foil liner, etc., will probably measure ¼ to ⅜-in.

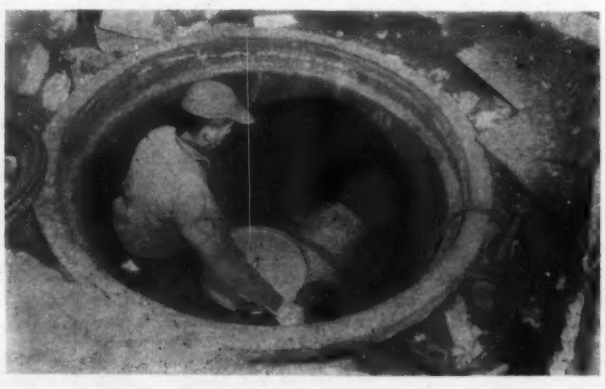
The bands are left in place for approximately 24 hours, allowing the sealant compound to harden in place, result of the polymer-catalyst interaction.

For removal, the band is unlatched, folded and tied, and taken out for use again on another job.

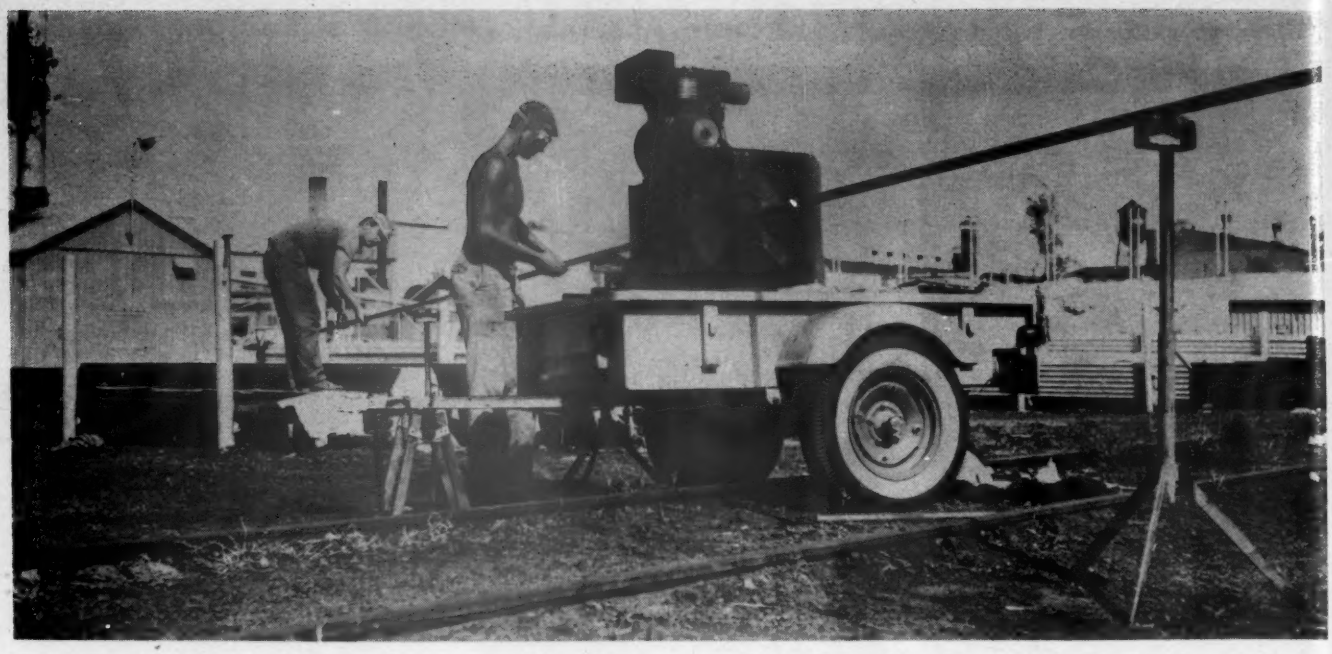
"Mix and Freeze" Solves Sealant Problem

Temperature and the need for thorough and precise mixing of the polymers and catalyst initially presented some problems. Needless to say, thorough and precise mixing of the materials is essential. Crews working with the material found that, in cold weather, the sealant would stay soft for several hours and they could premix a large quantity at one time for several bands. But in warm weather, they had to work fast.

As a result, a new procedure was developed. The sealant material is mixed in a separate plant by an outside contractor. This contractor then applies the sealant to the steel bands, folds and ties them, and places them in cold storage. These "deep freeze" bands are then delivered to the job site in an ice cream wagon. The cold prevents the material from curing. In this manner, a quantity of bands can always be ready for use as needed and field mixing with its accompanying fuss is eliminated. * * *



Drip cover openings are often utilized as one or both of required openings to allow workmen access to main segment where joints are being sealed.



Three-man operation. Bare pipe, handled by one man, is fed to the carrier rollers and into the wire brush cleaning head through the open guard doors. Man with goggles inserts connecting plug prior to entrance of pipe into machine and cuts the tape wrap after section is complete. Third man stacks the taped pipe.

New Portable Taping Machine Speeds Small Pipe Wrapping In Minneapolis

SAVINGS in time and in cost of protecting small diameter pipe are reported by Minneapolis Gas Company as the result of using a new pipe taping machine and vinyl tape to clean and wrap 136,000 ft of bare 1-in. and 1½-in. pipe in its storage yard. The new portable taping machine — which can be trailer-mounted — holds promise as being adaptable for use "on the job" in field operations.

In its initial application of the machine, Minneapolis Gas wrapped approximately 2500 ft of pipe per hour at an average cost of 6 cents per ft, compared to 7.5 cents or 8 cents per ft for mill-coated pipe.

The machine used, called the "Scotchrap" pipe taper, is powered by a 9-hp engine, performs four separate coating operations automatically.

1. **Wire brushes clean rust and mill scale from the pipe surface.**

Continuous flow of pipe is kept moving through machine by using a "connecting plug." One end of plug is inserted into pipe going through machine and other end is inserted into upcoming pipe. Raised flange in center of plug marks the joint after it has been taped.

After each length of pipe is completely taped, man at machine cuts the tape at point marked by flange on plug, removes the plug, and returns it to the other side of the machine to connect next bare length to pipe then being taped.

2. A special attachment applies a primer before

3. A wrap of vinyl tape is applied. The machine will also supply

4. An overwrap of felt tape for mechanical protection.

Pipe is fed into the machine through the cleaning heads — two wire brushes rotating at 4000 rpm — while the entire assembly revolves around the pipe at 800 rpm.

From the cleaning head, the pipe enters the driving mechanism consisting of two hardened steel rollers, knurled to grip the pipe. A spring-loaded idler roller, mounted above the driving rollers, keeps the pipe in positive contact with the driving rollers.

The machine then feeds the pipe through the primer roller, which applies pipe primer much like a paint roller. From the priming roller, the pipe passes between the two wrapping heads, which operate at a constant rate of speed, identical to that of the cleaning head.

Adjustments of lap width are made with the machine in motion simply by increasing the speed of the pipe passing the wrapping heads. Both taping heads are self-adjusting in angle for all sizes of pipe from ¾-in. to 2-in.

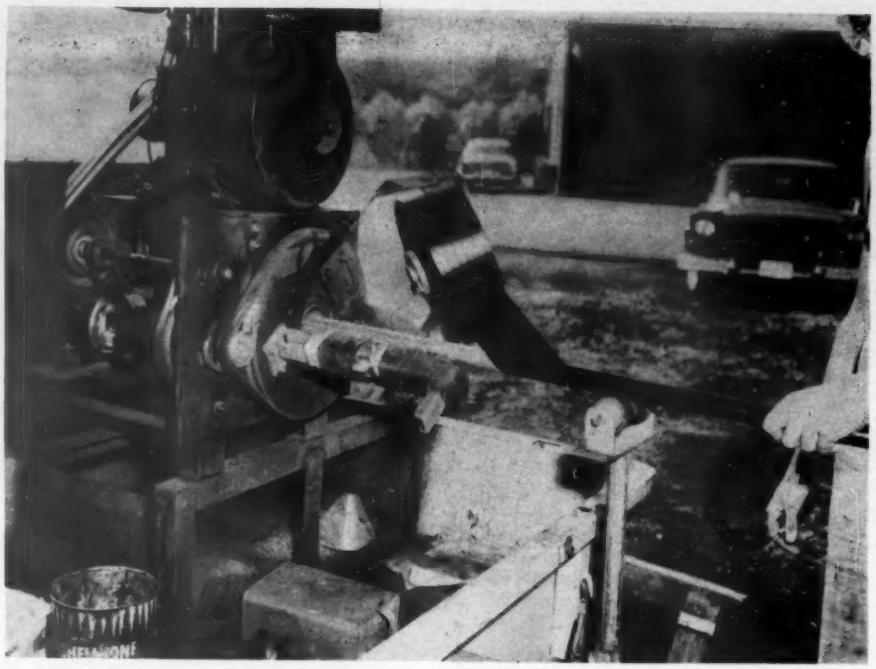
Adjustments that can be made with the machine stopped include those for various pipe sizes and tension on the cleaning brushes.

Once the first length of pipe has been fed through the rollers, the wrapping process is machine driven. A plug, furnished with the machine, is inserted in the trailing end of the pipe being wrapped and the leading end of the next length. After the plug goes through the machine, the tape is cut at the joint and the plug removed.

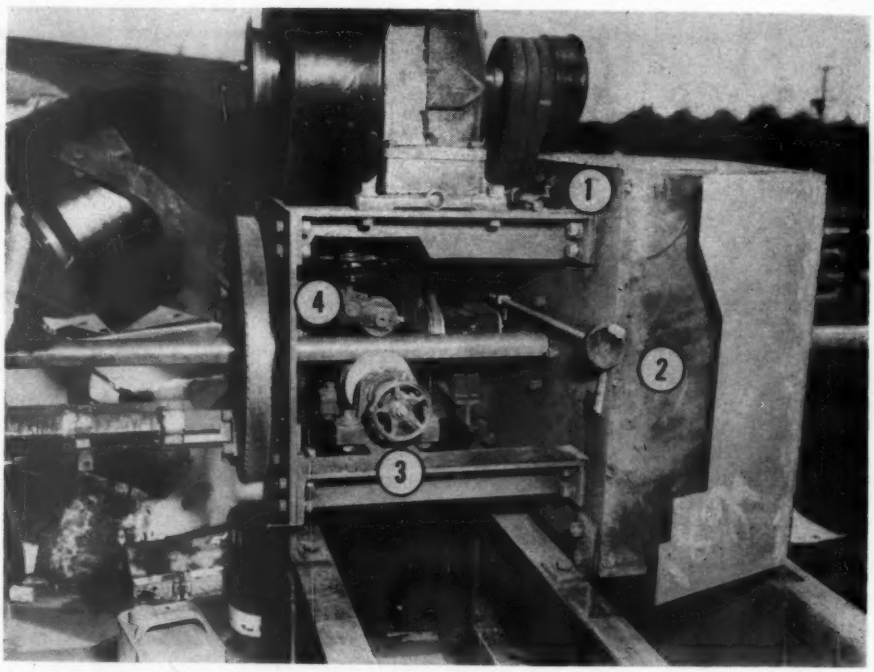
Tape used by Minneapolis Gas is Scotchrap No. 50, a 10-mil, black polyvinylchloride tape with 200 percent elongation, a tensile strength of 25 lb per in. of width, and a conformance factor of 35 percent at 10 lb of pull. It has an insulation resistance of 500,000 megohms and a dielectric strength of 9500 v per mil.

Familiar with the machine after approximately five days' operation, three men kept a constant flow of 1-in. pipe moving through the machine. One man loaded a series of stand rollers with pipe to be taped. A second inserted a guide plug in the trailing end of the pipe being wrapped and the leading end of the up-coming pipe. The same man also cut the tape at the point indicated on the pipe by the plug flange, separating the fully taped length from the pipe in the machine. A third man stacked the taped pipe.

Total labor cost for wrapping 2500 ft of pipe per hour was $8.92. Cost of the tape, plus fuel and maintenance on the machine, brought the cost to an average of approximately 6 cents per ft of wrapped pipe.



Close-up view of whirling head applying tape to pipe as it moves through machine.



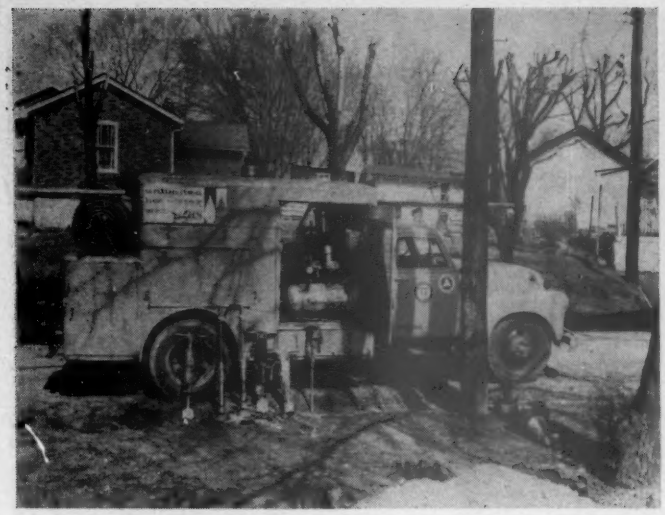
All controls for regulating taping machine are located on one side. Lever just under the driving belts (1) is the "start-stop" control for the tape head, which can be stopped without stopping the engine because of a centrifugal clutch. Small wheel (2) with the spinner knob controls the tape lap width by adjusting speed of the pipe through tape head. Larger wheel (3) beneath pipe controls spread of driving wheels to accommodate larger or smaller pipe sizes. Wheel just under the top of the machine (4) controls tension of idler wheel that presses the pipe into the driving wheels.

In this operation the machine was used only to clean and wrap the pipe. The expense of primer and over-wrap would have to be added if these materials were used.

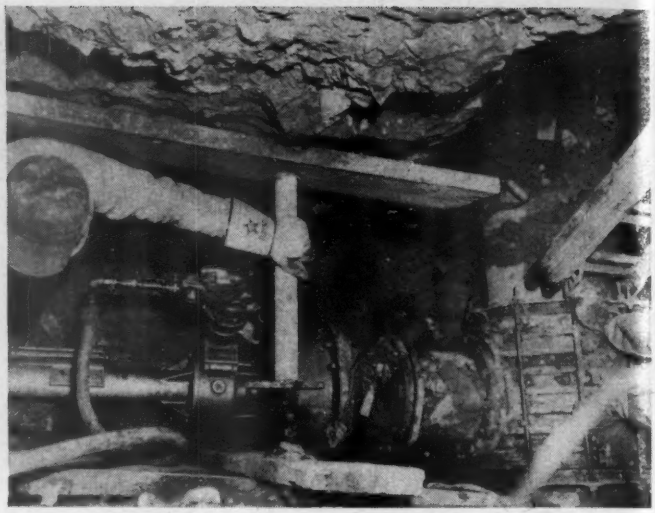
Once taped, the pipe was handled with the same precautions used with any coated pipe. When stacked, it was separated with boards or cardboard and care was taken not to drop or subject it to severe shock. When walking on the stack was necessary, workmen laid down sheets of cardboard to avoid damage to the tape coating.

By mounting the machine on a small-two-wheel trailer, it can be moved from site to site and placed for the most efficient taping. Roller stands and tools can be hauled in the same trailer.

* * *



Standard Laclede leak truck is shown with some of its Ingersoll-Rand air tools — (left to right) T-handled spade, two backfill tampers, two paving breakers, and jackhammer. Compressor is driven by power take-off from truck engine.



A 10 13/16-in. tap into a 20-in. gas main is made with a drilling machine powered by an air drill.

AIR POWER Helps Laclede Improve, Expand Gas Service

St. Louis utility uses compressors and wide variety of air tools to speed repairs, make service connections

MOBILE AIR POWER helps Laclede Gas Company maintain its facilities and meet surging demands for natural gas. Utilizing portable and truck-mounted compressors to supply the "muscle," the company is making broad and imaginative use of a wide variety of air tools. The result is improved maintenance of existing lines, swifter emergency service, faster extension of service to new customers, and substantial conservation of manpower.

A century-old company, Laclede has never suffered from hardening of the arteries. Organized to supply gas for lighting to a bustling frontier town, it has matched the city's growth and continued to pioneer in service and operating methods. Laclede began using natural gas mixed with manufactured gas in 1932 with the completion by its supplier of a 22-in. pipeline from Louisiana; the switch to natural gas entirely came in 1949.

Currently, the company is supplementing pipeline supplies with an ambitious underground storage program. Increased capacity to handle peak requirements enables Laclede to meet fast-growing demand for gas service, particularly for space heating. The company is accepting all new construction house-heating customers and 5000 conversion customers at a time, trying to whittle down an enormous waiting list, consistent with the storage development.

Air power for the main-tapping job and for breaking pavement as well as tamping is supplied by this portable piston-type air compressor.

Variety of Air Tools Used

Obviously, spectacular growth of the St. Louis utility has imposed a serious burden on the maintenance and construction departments. To speed the work and help make the best use of manpower skills, Laclede has equipped its field crews with air-powered tools.

Varied combinations of equipment have been evolved for the most effective application of "air power" to the four major activities:

Emergency leak repairs,
Programmed maintenance of old mains,
Service connections, and
Installation of new mains.

There are 36 leak trucks, each with air compressor and tools; 16 compressor trucks, with tool compartments, and 6 compressor-construction trucks that not only mount a compressor but can move a construction crew and its tools.

Two sizes of portable compressors

are used, 160 cfm and 210 cfm, all driven by gasoline engines.

Four sizes of mobile compressors are employed, 85 cfm, 105 cfm, 125 cfm (most widely used), and 210 cfm. Some are driven by separate gasoline engines, some by power take-off from the trucks on which they are mounted.

Experience and experimentation help Laclede to continually improve its leak truck design and complement of air equipment. Besides the basic compressor, a typical leak truck today carries a jackhammer, two paving breakers, two backfill tampers, a T-handle spade, a sump pump, and a pressurized air mask. The heavy-duty air tools speed location of leaks, repairs, and restoration of surface. As one indication of the improvement in service, it is estimated that a man with an air-powered spade can loosen hard pan or frozen earth in one-tenth the time it would take with a hand pick.

Leak Clamping Program

Increased demands for gas have taxed the older cast iron distribution mains in its system. Laclede has met the problem with an extensive program of bell joint leak clamping. Paving breakers are used to break concrete or asphalt surface; clay diggers are used to loosen compacted earth, clay, or frost to expose the bell joint.

Surface of the joint must be clean and smooth to provide the gasket with a good seat for a leak-proof connection. When the program was begun in 1952, crews used hand chisels and files to remove rust and smooth the joint. In the third year of the program, "triple scalers" were introduced on the job to replace the chisels and files. Use of the air-powered three-piston scalers has not only speeded work but has also improved quality, Laclede engineers report. Utilizing the air tools, four crews totaling 75 men have installed leak clamps on 4200 joints in a single year.

When necessary, final smoothing can be done with an air-motor-driven surface grinder equipped with either a 7-in. sanding disc or a 6-in. cup-type wire brush. Laclede is also experimenting with sand blasting bell joints and is working on an air-driven suction blower to recover the sand.

Earth Boring

Laclede has been a pioneer in the development of earth boring, both for installation of mains and for service connections. Advantages include savings in time and labor, little or no interference with traffic, minimum damage to lawns and pavements.

The company started drilling under streets about 28 years ago, using an air drill, a fishtail auger bit cut from a section of automobile spring leaf, and boat propeller shaft stuffing boxes and suitable hollow shafting to carry water to wash back the cuttings. Initially, water was introduced through the spindle of the air drills; later, a water feed was developed to introduce water on the drill rod side of the drill. Several types of air drills are used in this manner. Laclede uses 20-ft lengths of extra strong ¾-in. pipe for drill rod and a variety of bits to suit soil conditions.

One of the many notable jobs in the Laclede record book is a 330-ft boring made in 1944 for installation of a new 1¼-in. line. Pavements were opened only where necessary to make service connections.

Here is how the report reads:

"Arrived on job with crew of 8 men, compressor operator and compressor at 9:30 a.m. on May 2, 1944. Broke macadam pavement and dug openings the rest of the day. A heavy rain fell during the night and the openings filled with water that had to be bailed before drilling could be started. Began drilling about 9:15 on May 3, 1944. Completed drilling at 11:40 a.m. Completed installing pipe by 12:05 p.m."

A 330-ft hole was drilled and reamed in just 2 hours and 25 minutes. It took only 25 minutes more to install the 330 ft of 1¼-in. pipe.

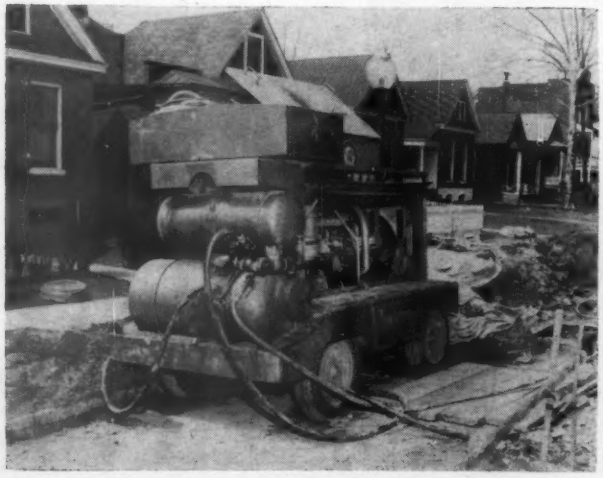
Service Connections

Boring is the predominant method employed by Laclede for service connections. Of the last 10,000 connections made, at least 7,500 were accomplished with air drills. Where possible, the bore goes directly from the customer's basement under lawn, walk, and street to the gas main. The basement wall is drilled with a jackhammer; the air drill then is put to work.

Only two or three openings are required: One at the main to make the connection; one near the curb to serve as a sump for wash back water and

Openings in the pavement are cut with paving breaker to expose bell joints as part of the leak clamping program.

After installation of the leak clamp, holes are filled in and earth compacted with backfill tampers.



Air power for one section of the bell joint leak clamping job is provided by this portable air compressor.

Part of the equipment on a leak truck, air-driven sump pump is handy for removing water used in locating leaks.

Mobile compressor-truck assigned to leak-location jobs.

dirt and to permit alignment of the drill rod; and in the case of a completed or occupied house, another wash back water sump just outside the basement wall.

When Laclede started service connection boring, a hand auger was used. The air drill cut time at least in half and freed two men for other work. Today, the company has 18 trucks (9 portable compressors and 9 mobile compressors) equipped with air drilling rigs with water feed for service connections.

On a line replacement job in the county, a crew of 6 men can go down the road from house to house, drill 30 ft under the lawn and another 20 ft under the street, make the necessary surface openings, and complete from 3 to 4 service connections in a normal working day.

A variety of air tools is used as required—jackhammer, paving breaker, spade, temper, and the earth boring drill. The boring machine can also be used to power reaming tools used for cleaning out old service pipe prior to pulling in new copper pipe in renewal programs. Variations of these air motors are used effectively for vertical drilling — from 2-in. holes for leak testing to 10-in. holes for installation of ground rods for cathodic protection of mains.

Main Connections

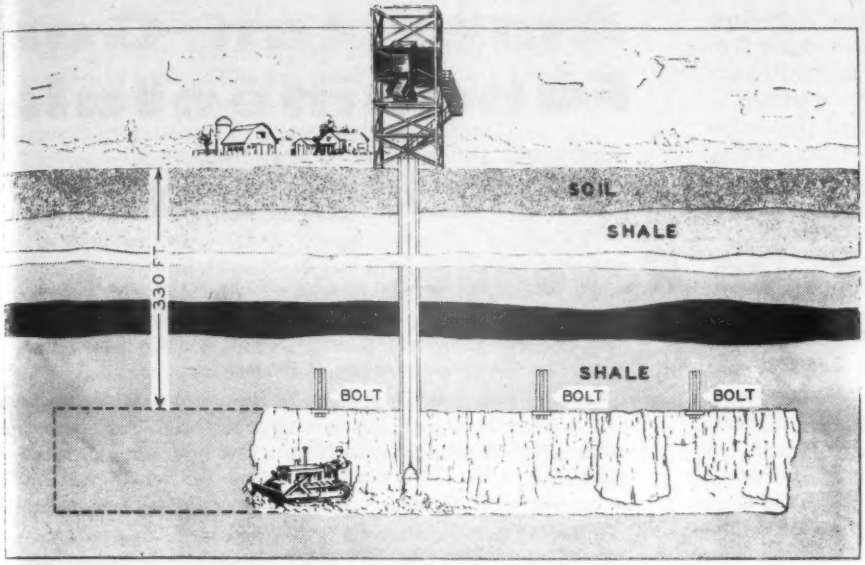
Laclede makes lateral main connections under pressure with drilling machines powered by air motors.

Several of the techniques pioneered by Laclede have become standard in the industry. Some, originated elsewhere, have been adopted eagerly by alert Laclede management. There is always an evident willingness to try new uses for compressed air in an effort to improve operations. Currently the company is planning introduction of air powered pumps for emergency pumping of drips.

Air tools, as utilized by Laclede, have a number of inherent advantages for gas distribution service. They are rugged enough to take the inevitable beating of all-weather work in the field. Even when overloaded, an air motor — whether on a drill, wrench or hoist — cannot burn out. Air tools are explosion proof, an important safety factor. Laclede has found that air power means swifter work, better job quality, less burden on the men, more efficient utilization of man power — all adding up to better service to the Laclede customer. * * *

T-handled spades are used to excavate bell-hole around main on a service connection job.

Bit can be seen (in foreground opening) about to enter the hole under the walk. Note that pavements are clear and open to traffic. Laclede has used air drill to bore as much as 330 ft.



Development of CG&E's new 150,000 bbl capacity LPG storage cavern on Todhunter Road near Middletown, Ohio, is shown in this artist's conception. Drawing shows shaft, bulldozer at work, and "checker-board" pattern left by standing pillars that support ceiling and separate cavern into 40 rooms. Heavy expansion bolts drilled into ceiling will compress various strata of shale and limestone to provide additional support.

CG&E Digs Big Hole For LPG Storage

ON A 100-ACRE FARM TRACT near Middletown, Ohio, a giant 40-tunnel catacomb, 330 ft underground, to be used for storing 6,300,000 gal of liquid propane is under construction. The cavern, to cost $700,000, is being built by the Cincinnati Gas & Electric Company as part of a $2,000,000 gas service improvement program.

Along with the cavern, CG&E will build a $1,200,000 propane-air plant approximately one mile east of the cavern. Daily capacity of the cavern and plant will be up to 50,000,000 cu ft of gas. Output of the plant will be used to supplement CG&E's gas supply during periods of peak demand.

Engineers found the shale and limestone formation under the Todhunter Road farmland ideally suited for use as natural underground storage tanks for the propane gas. First step in the unique project already has been completed. A 42-in. casing, ¾-in. thick, has been sunk 300 ft and cemented in place.

The deep hole was drilled in stages. A 4-in. hole was increased to an 8-in. hole and the drilling operation expanded gradually, through use of special drilling machinery, until the shaft was large enough to permit lowering of the casing. The hole was pumped dry before the casing was cemented.

With the casing in place, tunnel miners began work digging the cavern, which will have a capacity of 150,000 bbl. The first mining operation required two miners to descend the more than 300 ft down the casing inside a barrel-sized steel bucket. Using a pick and drill, they burrowed two holes big enough to set the first charge of explosive – about 10 lb. Upon their return to the surface, the dynamite was set off. After the blast, they returned to the base of the shaft and began the laborious job of hand shoveling the shale and limestone loosened by the blast, and sending it to the surface in the same bucket in which they were lowered. The miners then drilled more holes and set off another dynamite charge. As the hole became larger, they were joined by other miners. The work, according to S. E. Scisson, president of Fenix & Scisson, Inc., Tulsa (Oklahoma) cavern mining specialists, started from the ceiling of the cavern and will work downward. The first tunnel was 8 ft high and 6 ft wide.

After about six weeks of hand drilling and shoveling, a bulldozer was lowered through the 42-in. casing to speed up the work. This was accomplished by disassembling the entire machine and lowering it in the bucket into the tunnel where it was reassembled.

Two 6000-lb air-operated rocker shovels (loaders) operating on tracks in the cavern, also were disassembled and lowered piece by piece in the bucket into the cavern. The bucket will make 115,000 lifts of shale and limestone to give the cavern its 150,000 bbl or 6,300,000 gal capacity.

The cavern is being dug in the form of "tunnels," each about 25 ft high and 15 ft wide. "Pillars" will be left standing for support. Expansion bolts, 6 ft long and 1-in. diameter, driven into the ceiling to compress the various layers of shale and limestone formation, will hold in place steel channels used to give extra support to the ceiling.

When the underground excavation is completed, the bulldozer and rocker shovel again will be disassembled and brought to the surface, piece by piece. A cap then will be welded on the casing shaft and the cavern will be tested to withstand 200 psi.

Propane will be pumped as liquid from the cavern to the propane processing plant. The cavern and plant are expected to be in operation by August 1959. After the cavern is placed in service it may never again be opened for inspection or repairs.

CG&E is one of the few gas companies in the nation that has maintained a propane-air plant and an oil-gas plant for peak shaving use.

These plants are maintained at East Gas Works on Eastern Avenue in Cincinnati. Propane at this plant is stored in 15 steel storage tanks with a total capacity of 400,000 gal. * * *

Here's a tested formula for . . .

American Gas Fundamentals

Estimating Interruptible Industrial Service Revenues

Donald C. Neill, *Rate Analyst, Southern Counties Gas Company, Los Angeles, California*

INTERRUPTIBLE INDUSTRIAL SERVICE is not common to all gas companies. It is primarily an off-peak type of service designed to improve the system load factor, thereby assisting in the lowering of overall costs-to-serve. Interruptible service is utilized to its greatest advantage where the distribution company is dependent for the most part upon outside sources, such as transmission companies, for its gas and its purchases are made at a high volume and fairly constant rate in order that the total average cost of gas to the utility may be as low as possible.

Various types of rate schedules are used for interruptible gas service. Indeed, there are several different types of interruptible service. It may be helpful to describe briefly what is meant by an *interruptible customer* as used in this article.

First, he is a customer who, in consideration of a low rate, is willing to subject his operations to periodic interruption of gas service at indeterminable times, when such gas service is required by customers paying a higher rate, i.e., the firm classes (general service, gas engine, and firm industrial customers).

Second, he is a large volume user of gas and is primarily interested in energy *per se* and is, therefore probably guided in his choice of fuel on the basis of cost.

Third, his operations are generally of a type that will not be significantly disturbed by the period of interruption and, in most cases, an alternate fuel is provided by the customer to carry him over until gas service is restored. Periods of interruption will usually vary from a few hours to as much as several days.

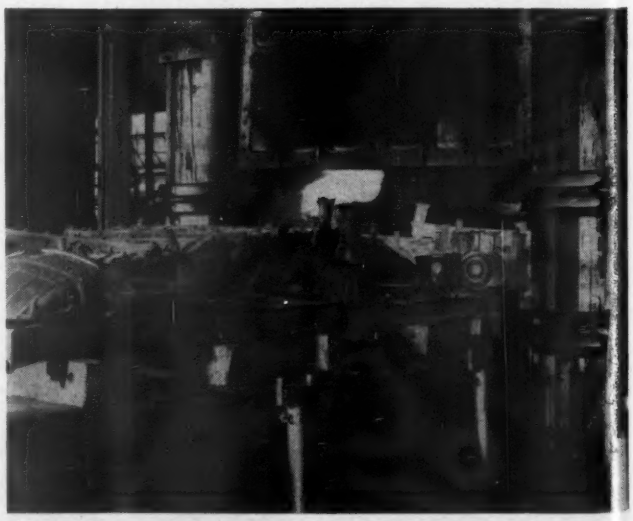
Interruptible service, as used in this article, is applicable to gas service to commercial and industrial customers, exclusive of service to utility steam electric generating plants and similar large users, such as cement plants. These latter customers will generally be provided with an even lower rate and priority of service, dependent, of course, upon gas availability on the system.

Table 1 is a typical rate schedule for regular interruptible industrial service. Under the "Special Conditions" portion of the schedule, certain limitations of service are specified; these conditions will vary between utilities due to local circumstances of supply and operations. Additional schedules for this type of service can be designed with even lower commodity rates and/or higher monthly minimum charges if conditions warrant service to a special class of interruptible service.

Interruptible gas service is available to many of the same industry groups found in the firm industrial class, i.e., dairies, glass manufacturing, metal working, dehydration and food processing plants, cleaners and laundries, large hospitals, and other institutions. The basic differences between the two classes of service are the *larger volume of gas used* by the interruptible customer and the usual requirement that he have an *alternate fuel supply* available in case of curtailment or interruption.

Analyzing Historical Usage Data

First step in making the revenue estimate is to gather together the pertinent historical statistics from which certain analyses will be made. This information should be assembled



Typical interruptible industrial customer uses a direct fired oven furnace for relieving casting stresses in high alloy steel castings. Working temperature is 2000 F.

EDITOR'S NOTE: This article is the last in a series of four presenting tested methods for making estimates of revenues from the various classes of customers typically served by a gas distribution utility. Previous articles appeared in *American Gas Journal* issues for June, September, and October, 1958. These dealt with general service, gas engine and firm industrial classes, respectively. Throughout the series it has been the intent to present a simple, straightforward, and reliable method for making revenue estimates.

Comments have been included with respect to various aspects of estimating, such as problems that are commonly met in rate case work, pitfalls to watch for when dealing with a particular class of service, and the necessity for periodically checking the results obtained in order that the validity of the approach may be verified.

Methods outlined can be used by anyone charged with the responsibility for making revenue estimates, though it would be highly desirable to give primary responsibility for such work to rate department personnel since they are generally the group which design the rates proposed to be charged the customer. In any event, it is essential that this responsible person should be familiar with the customer usage characteristics within that class for which the estimate is being made.

on a monthly basis for a period of at least several years. The first series of historical data should cover the number of customers served. Plotting these figures on a graph will provide the basis for an estimate, by months, of the number of customers expected to be served in the future.

The second series of historical data concerns actual Mcf sales and experienced Mcf curtailment. Though the former is of record, the latter is generally of necessity an estimate. The sum of the two items is termed *potential*, i.e., this figure represents the total amount of gas sales in Mcf that **would** have been experienced if the customers had not had their gas service interrupted. The amount of gas curtailed can be estimated based upon a fairly intimate knowledge of (1) the type of customers actually shut-off, (2) their average daily loads or gas requirements, and (3) the amount of time they were not allowed to use gas.

To Digress a moment: Within the framework of the operation of the interruptible rate schedule it is not infrequent to find a detailed segregation of the gas sales into so-called "curtailment blocks." This is a method of implementing curtailment for all interruptible customers on a basis that will provide for uniform curtailment to the extent necessary to release the required amount of gas for firm service demands.

For example, customers' usage may be classified in blocks A, B, C, and D, depending upon the amount of gas used. The larger customers will be in the "A" block, the next larger will be in the "B" block, then "C" block and the balance in "D" block.

During a short period of cold weather, gas may be curtailed only for customers in the "A" block. If the weather gets colder, curtailment will proceed through the "B" and then progressively through the other blocks as necessary.

Further, to provide equality in curtailment and billing as between customers, these blocks can be broken down into sub-blocks and the administration of curtailment on a rotation basis can be instituted. Such a detailed curtailment procedure is usually desirable when a fairly large number of such customers are served (perhaps several hundred). In the final analysis, actual curtailment is basically dependent upon conditions of gas availability to the individual utility.

Potential Sales Trend Chart

Utilizing the historical data, the total potential sales are reconstructed and a trend chart on a monthly and 12 months' moving total basis can be prepared for study. Before projecting the potential requirements into the estimated period, it is well to investigate any peculiarities in the graph that may be caused by one or several extremely large customers whose usage has a marked seasonal pattern, or is subject to other fluctuations. The basic estimate of the potential sales should

TABLE 1
Typical Rate Schedule For Interruptible Natural Gas Service

Applicability

Applicable, subject to interruptions in supply, to natural gas service to commercial and industrial customers, exclusive of retail service for utility steam electric generating stations and cement plants, where such customers are located near existing mains having a delivery capacity and supply in excess of the then existing requirements of present customers.

		Per Meter Per Month Base Rates 1100 Btu
Commodity Charge:		
First	200 Mcf, per Mcf	41.3¢
Next	800 Mcf, per Mcf	35.3¢
Next	2,000 Mcf, per Mcf	33.8¢
Next	3,000 Mcf, per Mcf	32.8¢
Next	4,000 Mcf, per Mcf	31.8¢
Next	10,000 Mcf, per Mcf	30.8¢
Over	20,000 Mcf, per Mcf	30.0¢
Minimum Charge:		
Per Meter Per Month		$50.00

To be made cumulative only when total billing exceeds $600.00 per Meter at any time during the contract year.

Special Conditions

1. Service under this schedule is subject to discontinuance without notice in case the company has an insufficient quantity of natural gas produced directly and/or purchased from major suppliers to satisfy its requirements of gas for underground storage and to supply with natural gas (a) customers under all its General Service, Firm Industrial and Gas Engine schedules, (b) customers under Special Contracts other than those for Interruptible Industrial service, (c) other public utilities. If the supplying of such gas under this schedule shall, in the opinion of the company, jeopardize or threaten the supply to any of said customers or said public utilities, then the company shall have the right, without notice, to discontinue such gas supplied under this schedule in whole or in part until it again has an amount of such gas sufficient to supply all of said customers and said public utilities in addition to supplying the gas provided under this schedule. Curtailment of Interruptible gas service shall be made in compliance with Rule No. 23.

2. Except upon an application made to Public Utilities Commission and approval first obtained:

(a) No customer (except as to a plant on an interruptible gas rate during all or a portion of the year ended December 16, 1941), applying for gas service hereunder subsequent to December 16, 1941, shall be entitled to such gas service, unless such customer shall have adequate standby fuel and equipment, and qualified attendants ready at all times to effect immediate change-over from gas to other fuel in the event that the supply of gas hereunder shall be discontinued.

(b) No existing customer using gas hereunder subsequent to December 16, 1941, shall be permitted to increase usage of gas hereunder for additional equipment (except as to equipment on an interruptible gas rate during all or a portion of the year ended December 16, 1941) unless such customer shall have adequate standby fuel and equipment, and qualified attendants ready at all times to effect immediate change-over from gas to other fuel in the event that the supply of gas hereunder shall be discontinued.

3. Service may be supplied under this schedule at the option of the company for short-term operations that are started and completed during the "off-peak" demand season (May 1 to October 1) without the provisions for standby fuel and equipment as required in Special Condition (2).

4. A contract covering the fuel requirements of the customer during the operation of his plant, for a period of at least one (1) year, will be required as a condition precedent to service under this schedule, except as otherwise provided in these Special Conditions, and shall continue in force and effect thereafter until either the company or the customer shall give the other party thirty (30) days' written notice of a desire to terminate same, whereupon at the expiration of said thirty (30) days it shall cease and determine. If the customer permanently ceases operations, such contract shall not thereafter continue in force.

5. In the application of this schedule, gas delivered to the various premises of a customer can not be aggregated.

reflect primarily the "mass" of customer loads with the large seasonal customers subsequently added in.

A test of the reasonableness of the projected total potential sales can be made by developing a *potential sales per average customer trend,* excluding the previously mentioned large seasonal customers. This trend should be developed on a monthly and a 12 months' moving total basis for the recent past and then projected into the future period based upon the estimated potential sales. The trend of potential sales per average customer so developed should not be incompatible with the past trend unless there is a definite reason for it, such as taking on a new type of load not previously served.

Once the potential sales have been developed and accepted they must be balanced against the total amount of gas available for the entire company sendout, by months. By this procedure the amount of curtailment and months in which it occurs is determined. This operation is a separate subject and is not discussed here. After the "balance" has been completed, the monthly sales are ready for pricing into revenue.

Pricing

First step in the process of pricing is to develop by months — for about a two-year period in the past — the average revenue per Mcf for interruptible industrial service. A sample of the type of data required is shown on Table 2. A graph is then constructed similar to that in Fig. 1, where the average revenue per Mcf is plotted against the total monthly sales.

After the points are plotted, a smooth curve or line is drawn through the points and this is called an "average rate curve." Reference to Fig. 1, which is based upon Table 2, will show that the average rate curve actually has two distinct levels with the break coming at the 1,600,000 Mcf point. This is the direct result of the rate schedule blocking under which the sales were made.

Any substantial deviation in a point from the average curve drawn should be investigated as to cause. For example, the point plotted at 32.30 cents per Mcf and sales of 930,000 Mcf is considerably below the curve. Upon analysis it was found that the billing for that month included an adjustment for the prior month when an over-billing occurred. The latter fact also shows up on the curve at the point of 33.35 cents and 964,200 Mcf. (See Table 2, January and February, *Recorded Year B.*) Any rate changes occurring during the period used for developing the unit revenue figures would result in the subsequent months showing a different average rate level. In such cases, of course, the current rate level curve is the one required for estimating purposes.

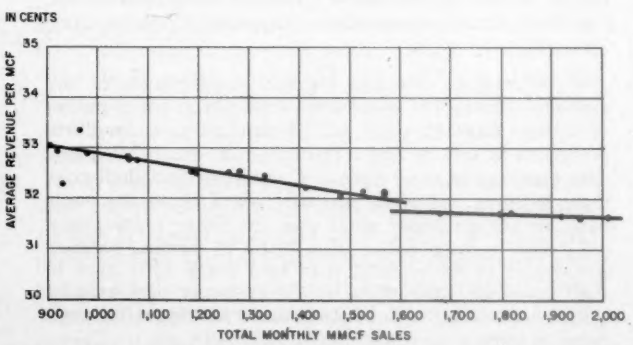


FIG. 1. Interruptible industrial service average revenue per Mcf versus total MMcf sales.

TABLE 2
Monthly Summary of Interruptible Industrial Mcf Sales and Revenue

Recorded Year A	MMcf Sales	Revenue	Average Revenue Per Mcf
January	905.3	$299,195	33.05¢
February	980.4	322,650	32.91
March	1,078.8	353,547	32.77
April	1,184.6	385,194	32.52
May	1,567.7	501,990	32.02
June	1,796.2	569,394	31.70
July	1,411.1	454,543	32.21
August	1,481.9	475,348	32.08
September	1,954.6	617,900	31.61
October	2,010.7	636,240	31.64
November	1,331.4	432,192	32.46
December	1,061.0	347,876	32.79
Recorded Year B			
January	964.2	$321,605	33.35¢
February	930.2	300,455	32.30
March	1,260.6	409,824	32.51
April	1,282.3	417,538	32.56
May	1,525.6	490,126	32.13
June	1,919.8	607,706	31.65
July	1,819.4	576,888	31.71
August	1,566.6	502,098	32.05
September	1,678.2	532,204	31.71
October	1,193.9	388,115	32.51
November	1,060.0	347,680	32.80
December	921.4	303,703	32.96

Estimating Revenues

The estimate of revenues is produced by months. For each monthly volume of sales the average revenue per Mcf is found on the rate curve. This same sales volume is then multiplied by that average rate, resulting in the revenue estimate for the particular month. For example, if the estimate of sales for the month of May is 1300 MMcf, the average revenue or rate is 32.45 cents per Mcf. Multiply: $.3245 \times 1{,}300{,}000$ Mcf $= \$421{,}850$. It is recommended that the average rate be read to the nearest one-hundredth of a cent, particularly if the volume of gas being priced out is large.

The *average rate curve* approach to estimating is entirely valid for use in connection with developing rate case revenue estimates. If the proposed rate level is higher by a uniform cents per Mcf and no change in minimum charge is proposed, the average rate curve would automatically be raised by that amount.

In actual practice, of course, it would only be necessary to multiply the estimated sales volume by the proposed commodity rate increase and add this total to the estimated revenues developed by using the current average rate curve. Revenue changes resulting from a different proposed minimum charge are a direct function of the estimated number of bills to be rendered during the period covered and can be handled as a separate phase of the total estimate.

Checking Estimates

Checking the accuracy of the estimate is limited to plotting each months' actual experience and making sure that each deviation from the average curve that appears significant can be traced to a specific reason. Investigation of each such deviation will also be a check on the billing procedure and applicability of the proper rate schedule.

If more than one rate schedule is available on the system the use of the average rate curve approach in estimating will still be valid since it is representative of the average industrial sales and revenue for the entire company. In actual practice, however, the experience of the individual company will be governing and modifications to the method can be adopted as desired.

Check List for Publicity

Turn the news spotlight on you and your gas company; you make news — get your share of local publicity!

Paul Lockwood

ARE YOU GETTING ALL THE LOCAL PUBLICITY YOU NEED?

Is your gas company or your name mentioned in the local news every time you do something noteworthy?

Chances are good your answer is "No" to both questions. Most gas company executives do not realize how many opportunities they have during a year for good local publicity.

You make news—get your share of local publicity!

Here is a handy check list of newsworthy items that can result in good publicity for you and your gas company.

Personal Publicity

Names make news. As one of the leading businessmen in your community, your name is newsworthy. You and your family do things that are of interest to others. News items on these events will give you and your gas company good publicity.

Consider these news items:

- ____A birth in your family.
- ____A marriage in your family.
- ____Election of your wife to some office—church, club, or school.
- ____When you entertain friends in your home.
- ____When former residents of your community return for a visit with you.
- ____A vacation trip—before you go and after you return.
- ____A special wedding anniversary—25th or 50th.

Employee Publicity

Opportunities for legitimate publicity multiply in relation to the number of employees of the gas company. All items listed for personal publicity can also be applied to all other employees.

In addition, there are many newsworthy employee activities that can give your company valuable news coverage. For instance:

- ____When you hire a new employee, a news release will introduce him to the community and engender loyalty to the company.
- ____Promotion of employees.
- ____When employees engage in sports events—baseball teams or bowling teams.
- ____Employee group entertainment such as picnics, dances, or dinners.
- ____A contest of some type for your employees.
- ____Inauguration of a new compensation plan for your employees—bonus, profit sharing, retirement, etc.
- ____When an employee attends a business meeting in the gas industry.
- ____Recognition for an employee's outside activity.
- ____When an employee leaves your firm through retirement or a move to a new community.

Management Publicity

People are interested in what makes your business "tick," and in you as a business leader in the community. Naturally, you cannot reveal "trade secrets," but your management ability is news—and good publicity for the gas company.

Consider how these ideas will make good news releases:

- ____Establishment of some new type of service for your customers.
- ____Purchase and installation of new equipment.
- ____Expansion of your business—enlargement of meter shops and service centers, extension of service lines, providing gas service to new communities, etc.
- ____Special anniversary of the founding of the company.
- ____Recognition of your management ability by a national organization.

Industry Recognition

Newspaper editors are sometimes amazed to find a local businessman has received some national acclaim. Not because the editor does not feel he has the ability, but because it has been kept a secret on the local scene.

National recognition is good. But, it can be more valuable if you let local people know about it.

Here are several opportunities for local publicity on national recognition:

- ____Articles about your gas company appearing in a business magazine.
- ____When you attend a convention.
- ____Election to an office in your association.
- ____Giving a speech at your association convention.
- ____When you are asked to express your opinion on the future of the gas business.
- ____National recognition for your advertising.
- ____Winning of a prize in some nation-wide competition by one of your employees.
- ____Serving on a committee to study some problem of the gas industry.

Civic Activity

Newspapers, as a matter of policy, cover all civic events. A gas company executive who is active in civic affairs will automatically receive publicity. Some events that will put your name in the news include:

- ____Election to an office in a service club or lodge.
- ____Giving a speech or introducing a speaker at some banquet.
- ____Actual work for a local charity.
- ____Donating facilities to help promote some local event.
- ____Work with a local fair committee or entering an exhibit in the county fair.
- ____Any work with your local schools—school board, advisory board, etc.
- ____Work with any local youth organizations—Teen Club, Boy Scouts, etc.
- ____Election to some civic office—mayor, city council, etc.

You are in the news—more than you think! You have just reviewed many of the items that will give you valuable publicity for your gas company. **You make the news—let the world know about it!**

A YARDSTICK FOR VEHICLE REPLACEMENT

Plan your replacement program for passenger cars in utility fleet service by using the best of each of the various methods commonly used

Howard J. Wurth,
Commonwealth Services, Inc.
Jackson, Michigan

PLANNED REPLACEMENT PROGRAMS for passenger car vehicles in utility fleet service have many advantages; among them are:

1. Based on depreciation costs and the amount of money available for replacement, cost differentials that will justify replacement can be calculated in advance. When considering any individual vehicle for replacement, it is necessary only to compare the average costs of repairs to date with the average cost including an impending overhaul.

2. By replacing cars in advance of major overhaul, considerable savings may be realized in the reduction of personnel, supervision, and garage and equipment space necessary for repairs.

Most popular criteria for passenger car replacement seem to be:

a. **50 to 70,000 miles,**
b. **about 5 years of age, or**
c. **the general condition of the automobile.**

There are well-founded doubts that any infallible solution to the replacement problem exists; if it did, it would still be subject to the state of company finances, current interest rates, the unexpectedly good or bad operating points of a particular model and the estimated costs of next year's models.

It should be pointed out that there are several factors pertinent to this discussion:

1. **It is limited to passenger cars** in public utility fleet service.

2. **Classes of service and annual mileage rates** in this study, while representative of many fleets, are not intended to be exact. It cannot be too firmly stressed that any proposed system of determining replacement schedules can be only that. The figures used in your analysis must be your figures, and the all-important judgment factors must be applied by someone familiar with your operation.

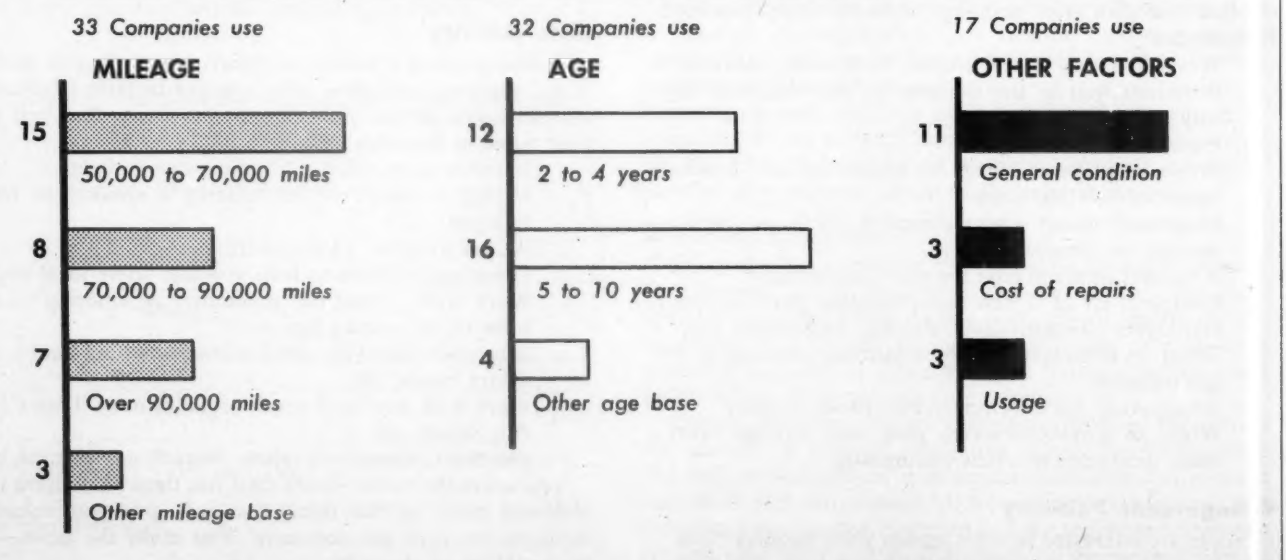
3. While it is recognized that **economics** has an effect on replacement policies, these factors are not discussed here.[1]

Factors Affecting Replacement

Many factors influence the determination of the optimum time to replace existing vehicles. Among those having

[1] For a resumé on the finer points of finance, reader is referred to two recent A.G.A. papers:
1. *"Capital Expenditure Management of the Motor Vehicle Program,"* DMC-53-4, by Joel Dean, discusses vehicle ownership and replacement as a problem of control of the company's internal capital investments.
2. *"Economic Replacement of Automobiles,"* DMC-56-1, by Paul H. Jeynes, explains how to determine when replacements are economically justified and why it is done that way.

Survey of 82 Companies Shows Basis For Replacement of Passenger Cars



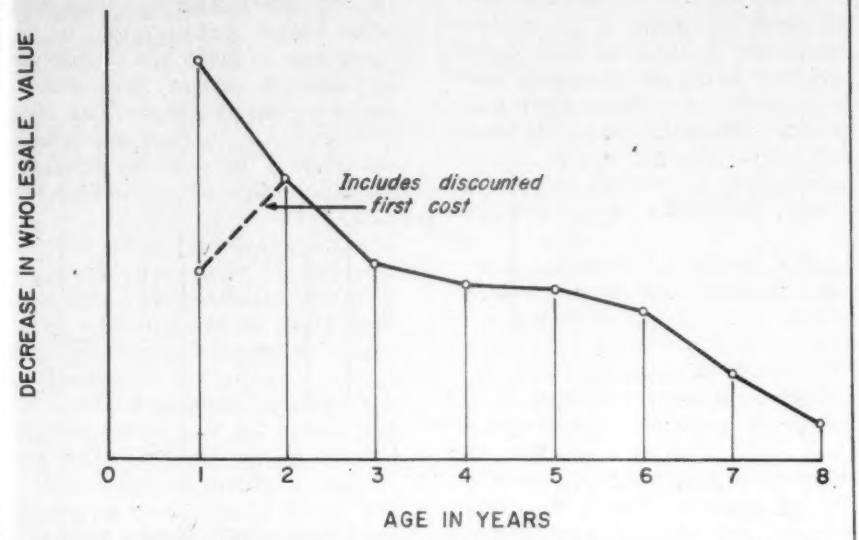


Fig. 1. Depreciation costs showing effect of discounted first cost.

lesser effect on the calculation of replacement time are:

Availability of Capital. This factor has no effect on whether a vehicle *should* be replaced; it merely determines whether it *will* be replaced. Management may decide to expend the majority of available capital on expansion or strengthening of revenue-producing plant. As the cost of capital continues to rise, this may become more and more a factor in deferral of replacements.

Federal and State Taxes. Federal income taxes seem to have little effect on vehicle replacement. Regardless of the method used in corporate books to depreciate vehicles, many fleets use a composite depreciation rate based on the life of all plant, and this life is usually far in excess of any reasonable service life for passenger cars.

The net result is that practically no tax benefit is available provided, (a) the company remains in business, (b) it continues to operate at a profit, and (c) the income tax rate is not changed.

There is very slight decrease in income taxes accruing from longer depreciation schedules, but it is insignificant when compared to the dollars required for maintenance and depreciation. The effect of state and other taxes are best evaluated by each company's own accounting department.

Cost of Transferring Equipment. Labor and materials required to transfer mobile radios or other equipment should be included in any comparison of costs. This factor will be most significant when considering early replacement.

Unreliability and Obsolescence. Neither of these will be a significant factor in a well maintained fleet.

Factors Affecting Replacement Schedules

Because all cars that might be *economically* ready for replacement are not always replaced, the following factors should be considered:

Class of Service. A recent study indicates public utility passenger cars should be divided into at least three classes, and that only cars in the same class and with approximately the same mileage should be compared with each other.

A. OPTIMUM SERVICE. This class includes, essentially, over-the-road cars having relatively high annual mileage, good resale value, and minimum maintenance in their early life, with mileage ranges of 15,000 to 25,000 miles per year. In general, replacement for this class of service is indicated at high mileage in the early years of life.

B. AVERAGE SERVICE. A high percentage of the average fleet is made up of cars in this service; they are estimated to be driven from 10,000 to 15,000 miles per year. These cars would be expected to accumulate less mileage before replacement than those in Group A.

C. SEVERE SERVICE. These are the "rough" cars of the fleet, subjected to rural roads, sometimes low mileage, start and stop service, and characterized by high repair costs and low resale value.

Vehicles in this service will have quite a comparatively high cost per mile of operation, and early replacement seems to be the only way to keep these costs from becoming excessive.

Costs Adjusted For Mileage. This factor should be kept in mind when evaluating cars, especially when doing so on a mileage-cost basis. Influenced by such factors as customer density and available transportation, the mileage driven per year may vary radically from car to car, especially where the practice of pooling transportation is not followed. The cost per mile will vary inversely as mileage, and should be adjusted to enable cars in different operations to be compared.

Costs of Operation

A third group of factors includes direct and indirect costs of operation. When comparing the cost of repairing the present vehicle to increased depreciation cost of the hoped-for replacement, it is obvious that the inclusion of costs that are the same for both cars will tend to confuse the issue and should be disregarded.

Gas, Oil and Lubrication. The cost of gas, oil and lubrication are "operating costs" and amount to a higher total than any of the other itemized costs of passenger car operation. These costs may vary from time to time and car to car. These costs should be reduced after a tune-up; however, the variations may be disregarded because:

a. Analysis assumes that the vehicle is kept in good operating condition at all times.

b. Driving habits are expected to influence gas mileage more than mechanical condition.

c. Savings in gas and oil will seldom justify the expense incurred in major overhauls.

For those who prefer to include varying costs of gasoline and oil in their analysis of expenses, a flat increase could be added to the cost of operation for each year of service between overhauls.

Tires and Tire Maintenance. This cost includes tire maintenance and the cost of replacement tires and tubes as required, and will be found to be relatively constant.

Miscellaneous Expenses. This relatively moderate expense includes all general costs—e.g., the depreciation of the garage building; the cost of heat, light, and power; the value of the parts inventory, and the salaries of foremen and supervisors. Such items as license and title fees may also be included. The major portion is constant and can be disregarded, although a certain portion of the cost of supervision and

garage equipment is proportional to the amount of major repairs being done. Obviously, if less major work were done, this cost could be reduced; on the other hand, the same amount of equipment and supervision could serve a larger number of vehicles with less maintenance.

Depreciation. Depreciation of passenger cars is affected by so many variables that only general statements, suitably qualified, may be made concerning trends. Since 1952, the depreciation on fleet class cars has swung toward the classic formula of 35 percent the first year and 25 percent of the succeeding balance each year thereafter. However, the 10 to 15 percent reduction from list price sometimes offered to quantity purchasers may offset normal depreciation to the extent that the first year's depreciation may be about the same as that experienced in the second or even the third year. Since the depreciation varies from month to month, it is advisable, and feasible with early retirement practices, to schedule replacements at times when used car values are highest.

Fig. 1 shows the variation in depreciation charges as experienced over the past several years. Note the relatively light depreciation experienced between the third and sixth years.

One factor concerning depreciation is not always realized. Much like "Miscellaneous Expenses", depreciation goes on from day to day and except for the number of cars purchased, there is practically no control over the total depreciation expense which accumulates. As it is a major expense and a variable one, it will have a decided bearing on replacement.

Maintenance and Repairs. This item includes all necessary repairs to engine, body and chassis, and a reasonable amount of preventive maintenance to minimize such repairs. Repair and maintenance costs have a behavior pattern different from the other costs we have considered. They occur at irregular intervals and require an immediate expenditure of time and money, the amount varying with the degree of mechanical trouble. It is this characteristic (Fig. 2) that makes the cost of repairs of prime importance in this system of determining replacement times. These costs vary more with the service conditions than with the rate at which mileage is accumulated.

Depreciation vs Repairs

It is apparent that only depreciation and repairs are dominant factors in determining optimum replacement times. As a general rule, the early life of a vehicle will be characterized by high depreciation costs while repair costs are low. As the vehicle ages and its mechanical condition suffers, the converse is true.

While depreciation and repair costs may be numerically equal over the life of the car, still they are inherently different and should be so regarded. Only the latter are subject to control, chiefly either by lowered maintenance standards or by replacing the vehicle before major repairs are necessary.

The cost of avoiding major repairs is approximately equal to the "carrying charges" on the additional capital required for early replacement and is estimated at 15 to 20 percent of the investment. The "carrying charges" on major repairs are composed of fringe benefits for the additional labor required, the overhead required to supervise and administer these people, the investment in machinery and parts and the costs of providing substitute transportation for the time the vehicle is in the shop.

It appears less expensive to spend replacement dollars than maintenance dollars and retirement is urged early rather than as late as possible, especially for vehicles in severe service.

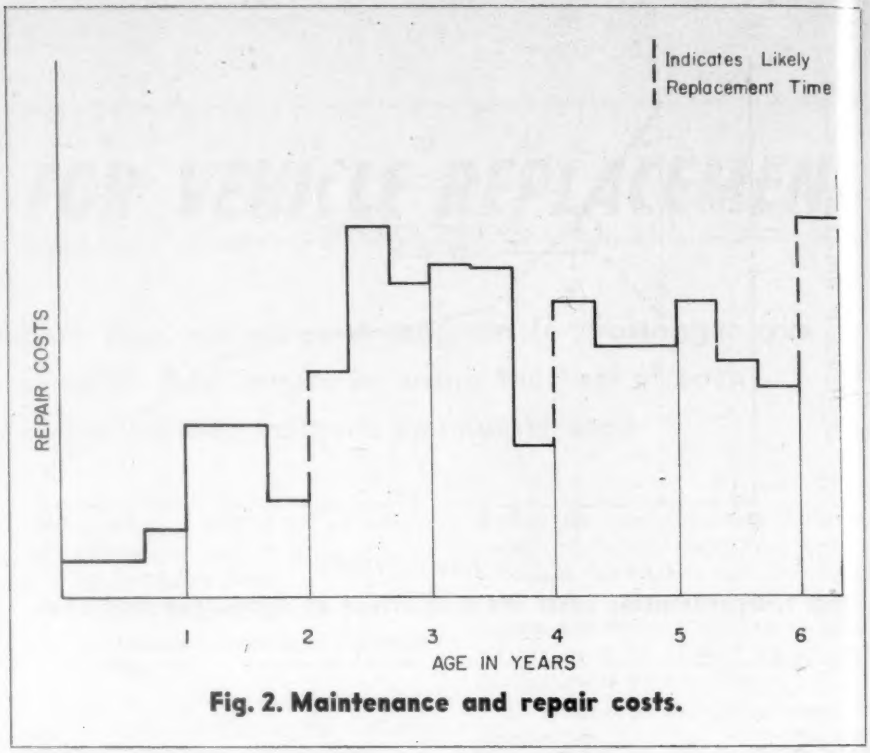


Fig. 2. Maintenance and repair costs.

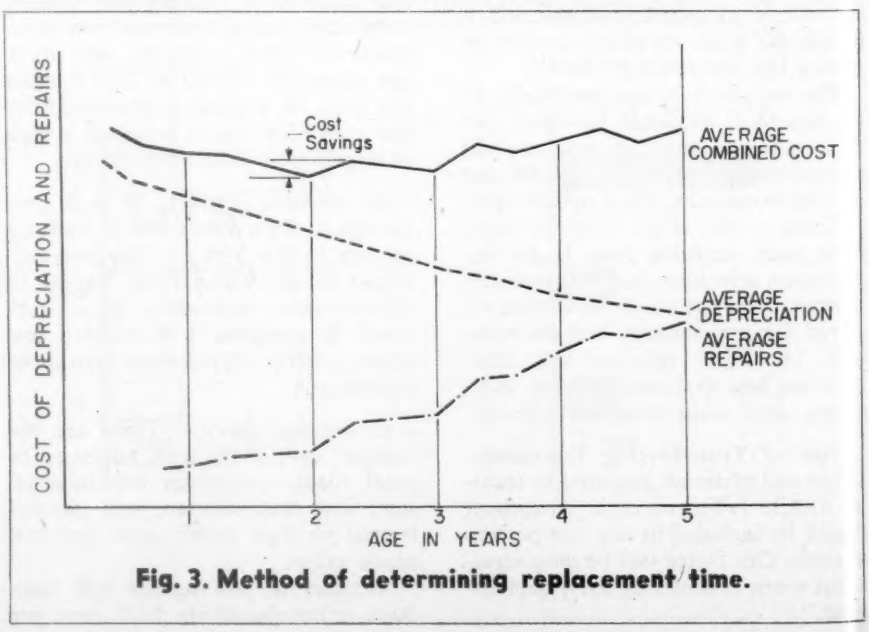


Fig. 3. Method of determining replacement time.

Determination of Replacement Time

Preparation of Cost Data. All systems of determining replacement times require two types of cost data:

1. Historical costs of depreciation, repairs and/or other factors to be included in the analysis.

2. Predicted costs of depreciation and operation of the replacement vehicle.

Because actual records of such costs are not always available, the expected repairs over a long period of operation may be estimated and the costs compiled. They can be adjusted as experience dictates.

In a similar manner, estimated depreciation costs can be drawn up, based on "blue-book" values of used cars. It is suggested that these costs be prepared for each class of service and for varying mileages, for a total life in each case of 100,000 miles or so. In this way, it will be possible to "look" at expected future costs of the passenger cars and predict the optimum replacement time. Perhaps a small number of "pilot" vehicles could be monitored to check the estimated data.

Comparison of Past and Future Costs. In order to determine when the vehicle should be replaced, it is necessary to compare past and future depreciation and repair costs.

An example of this technique is shown in Fig. 3, which also shows the average cost to date of each item. When comparing the actual and predicted depreciation, it is reasonable to assume the same depreciation for the new car. Where the cost of the new car is higher, the average depreciation cost curve can be adjusted in proportion.

When contrasted with the average cost of repairs to date, impending major expenditures appear as a sudden increase over the average cost to date. It is at this point in its life that the vehicle should be seriously considered for replacement, not just at the end of each year.

Compare the average cost of depreciation and repairs including the impending repairs with the expected average combined cost of the replacement car. (In this example, it is considered to be the present average cost of the unit being considered for replacement.) The difference is the predicted cost savings due to replacement of the present vehicle before making the major repairs.

The predicted cost savings is the **yardstick** against which replacement will be measured, and it will vary from car to car. The yardstick will be directly proportional to the money available for replacement and the desire to avoid major repairs. It will be shortened or lengthened by the application of factors we have discussed.

A vehicle whose average combined cost is rising and which is faced with major repairs should be seriously considered for replacement. Those showing the most "profit" will be most eligible for replacement. In a recent study, replacement times of from two to six years were indicated, with mileages varying from 30,000 to 75,000 miles or more, depending upon service conditions.

Experience has shown that a clear-cut replacement time is not always indicated. Odd as it may seem, vehicles in certain classes of service seem to have a rather even cost throughout 100,000 miles or so, often varying slightly, but never enough to clearly signify replacement. On such cars, appearance and unreliability will govern.

Acknowledgment

This article adapted from a presentation by the author at the A.G.A. Distribution Conference, New York City, 1958.

* * *

A FAVORITE EVERYWHERE . . . CROSE EQUIPMENT,

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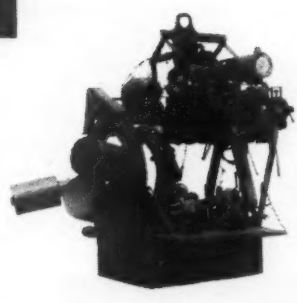
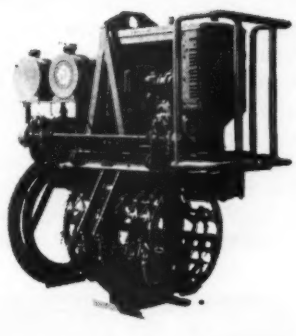
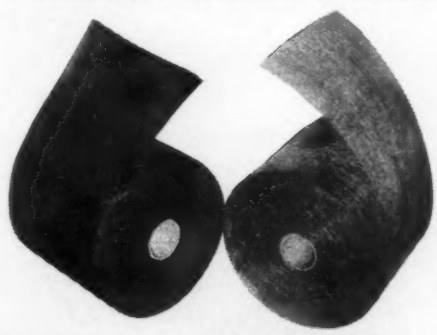
- BLUE FLAG L-O-F GLASS FIBER PIPE WRAP, JOHNS-MANVILLE FELT, SEALTIGHT PIPE SHIELDS.

Crose offers a most complete line of equipment for the gas distribution industry. Crose equipment, materials and supplies are always available to you on shortest notice—we have many strategic supply points and use fastest transportation methods. Always check first with Crose on any pipeline construction and maintenance needs.







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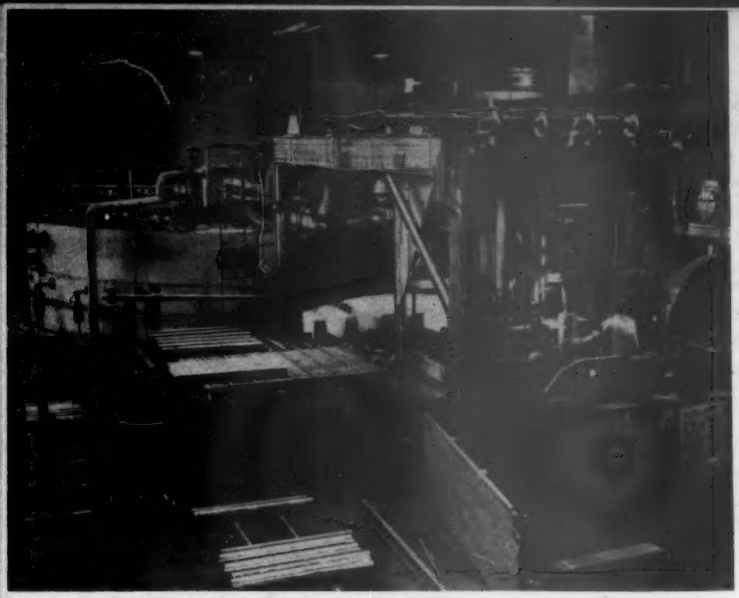
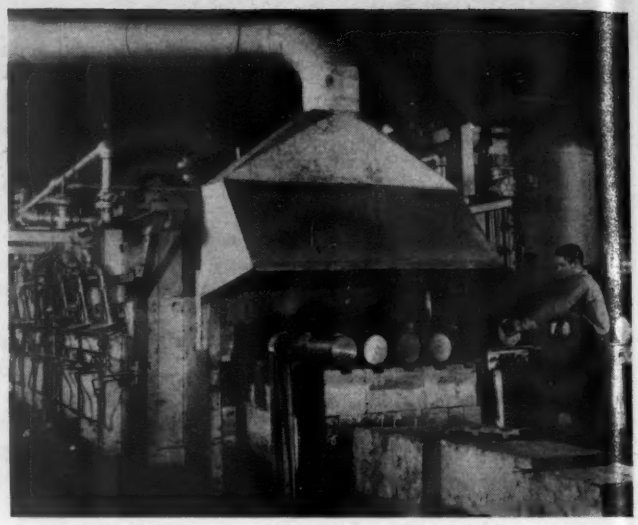


Rotary hearth type gas-fired billet heating furnace heats 9-in. billets for piercing at the rate of one a minute at the Chase Brass & Copper Company in Waterbury, Connecticut.



Another continuous gas-fired furnace heats large diameter billets for the extrusion press.

Gas Is Preferred Fuel in Brass Works

Arthur Q. Smith
American Gas Association
New York

WATERBURY, CONNECTICUT, rightfully comes by the title "Brass City of the World" because of the several plants producing basic brasses or manufacturing thousands of products from this important and popular metal.

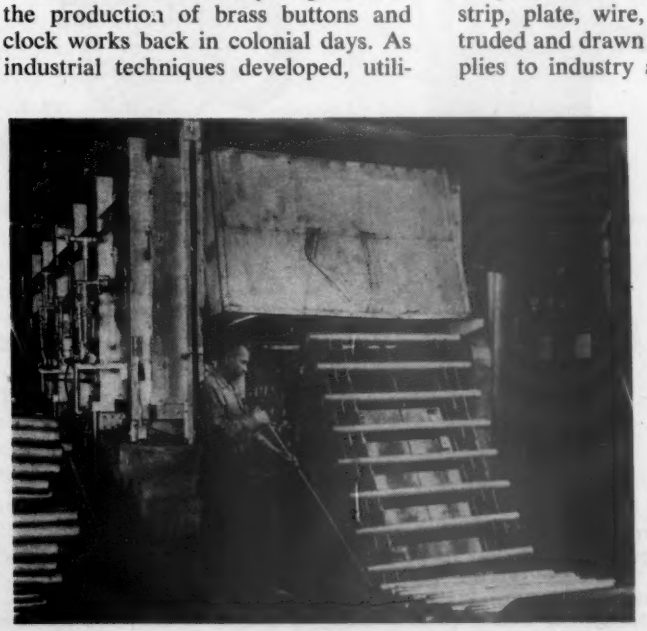
Some eight decades ago, the Waterbury Manufacturing Company was incorporated and eventually grew into what is now the Chase Brass & Copper Company, Incorporated, and became a subsidiary of Kennecott Copper Corporation in 1929.

The use of brass really originated in the production of brass buttons and clock works back in colonial days. As industrial techniques developed, utilization of brass and copper expanded to the point where its end uses are almost universal for most metal products that do not need the strength of steel. Chase is one of the largest producers of brass and copper mill products, in forms of rod, sheet, bars, tube, wire, etc., including extruded shapes. The parent concern Kennecott Copper Corporation, is the world's largest individual producer of copper.

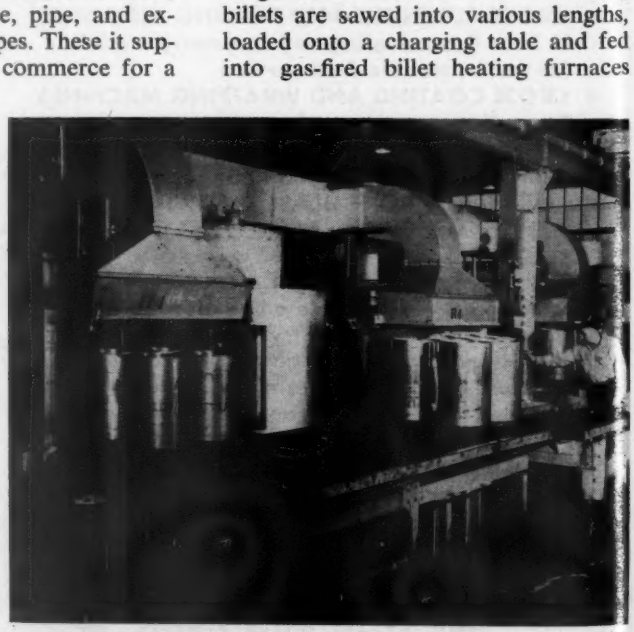
At Waterbury, Chase produces copper and brass, bronze and other copper alloys in the form of rod, bar, sheet, strip, plate, wire, tube, pipe, and extruded and drawn shapes. These it supplies to industry and commerce for a multitude of uses. Thousands of factories use the products of the Chase Metal Works.

While gas fuel is used throughout the plant, this article is principally concerned with the gas applications for the heating of billets for use in extrusion presses and piercing for tubing.

Copper and copper alloy billets are produced in the casting shop. For extrusion and piercing purposes, round billets are cast which measure up to 8-in. in diameter, 100-in. long and weigh some 1500 lb. For extrusion, billets are sawed into various lengths, loaded onto a charging table and fed into gas-fired billet heating furnaces



A gas-fired continuous muffle furnace is used to heat billets that are to be pierced.



Bright annealing furnaces for strip and other shapes are all gas-fired at Chase Brass & Copper Company.

of which there are three serving the extrusion presses. Two are for smaller diameter billets, direct gas-fired and are of the roll-down hearth type. Billets are heated to temperatures of 1450 to 2100 F for a 2½ to 3-hour cycle. Temperatures and time cycles are dependent on the particular alloy to be extruded. Each of these smaller furnaces has a capacity of about 10,000 lb per hr.

The other billet heating furnace, for the 8-in. diameter by 16 to 32-in. long billets, is also a direct gas-fired furnace operated at the same temperatures and time cycles as the other two furnaces mentioned. Billets are loaded on cars which are automatically pushed through the furnace at a prescribed rate of speed. This furnace has a capacity of 20,000 lb per hr and a gas input of 10,000 cu ft of natural gas per hr. Billets from this furnace go to the large extrusion press which forms rods, wire, tubes and shapes under a force of 5,000,000 lb.

There are two other gas-fired billet heating furnaces to serve the piercing machines. One is a continuous through-furnace for billets 3-in. in diameter, which can deliver one billet every 30 seconds. Temperatures are from 1600 to 2000 F depending on the alloy. This furnace has a Btu input of 6,000,000 per hr.

The other billet heating furnace for piercing is a direct gas-fired rotary hearth type for billets up to 9-in. in diameter. With a capacity of 30,000 lb per hr and a 15,000,000 Btu per hr input, one billet per minute is delivered to the piercing machine.

Throughout the several shops of the Chase Metal Works, there are many bright annealing furnaces to condition the various products as they are drawn or rolled. With the exception of the basic melting and casting furnaces, which are of the induction type, all other processing furnaces are fired with natural gas under complete automatic control and safety devices.

To meet present day production requirements, gas is the preferred fuel to keep up with production schedules and quality of product. * * *

New Use for Gas?

Humane Slaughter Bill, passed by the last Congress, prohibits federal agencies from buying meat from plants that do not render animals insensible before slaughter. One method of humane slaughter practices of interest to gas people is use of CO_2 to anesthetize animals prior to slaughter. The Food Processing Committee of the A.G.A. Industrial and Commercial Section plans study to determine if carbon dioxide manufactured from natural gas would be cheaper than using bottled or frozen CO_2.

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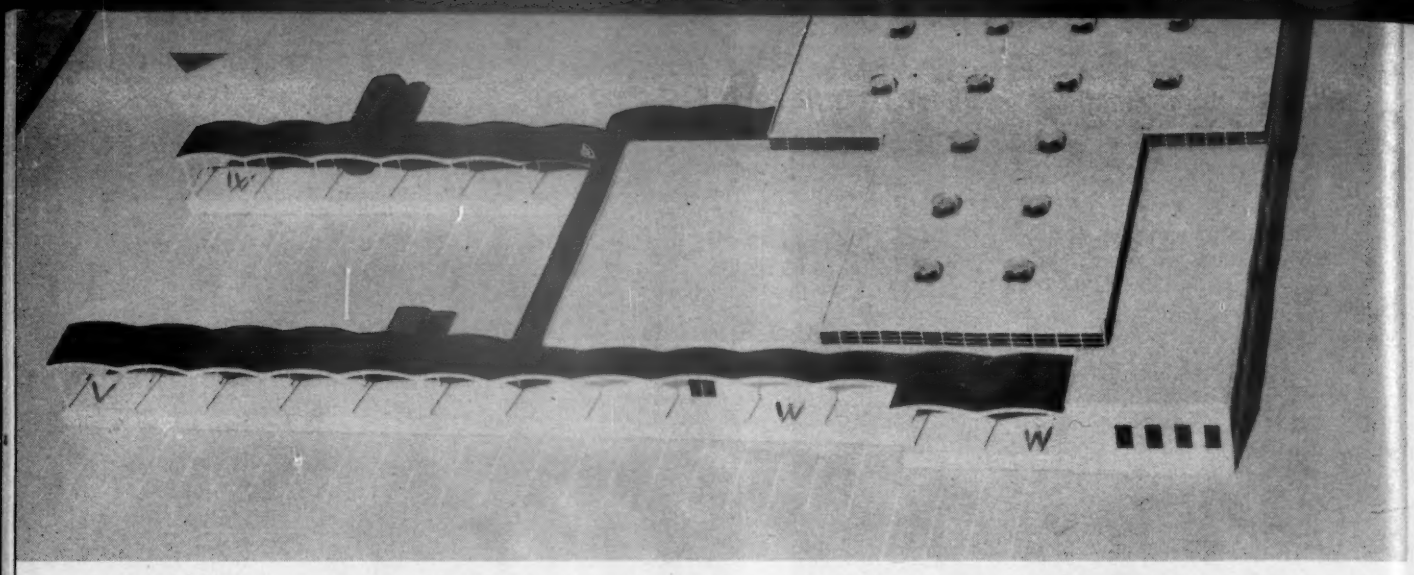


New $125,000 warehouse being built by Northern Illinois Gas Company in Bellwood will provide 23,200 sq ft of space to house firm's stores department office, welding school, meter storage, shops and tool storage, and various utility material and appliance stocks. Covered docks — 9700 sq ft — will accommodate 56 trucks, using three receiving and four shipping bays. Office space will be gas air conditioned.

"WHERE GAS IS GROWING"

Distribution Developments

NEWS ABOUT CURRENT AND PLANNED CONSTRUCTION

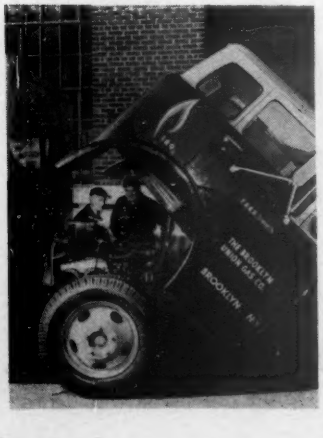
Northern Illinois Gas Company, Aurora, Illinois, added the 273rd community in its 20-county service area to be served with natural gas recently when gas was turned on in East Chicago Heights. Company will convert all present gas appliances for customers as they are connected. Installation of distribution mains is underway. Company also has underway construction of a $125,000 warehouse in Bellwood (see photo above).

North Carolina Natural Gas Company, Fayetteville, North Carolina, has received FPC exemption under the Hinshaw amendment and is expected to announce financing plans soon for construction of its facilities, including distribution systems in 22 urban centers in the Tar Heel state. Company will also service four municipalities that will have city-owned systems, plus supplying Tidewater Natural Gas, which serves five major cities in the area. Distribution system construction is expected to cost $3,000,000. Tentative date for completion of the systems is early 1959.

Cincinnati Gas & Electric Company, Cincinnati, Ohio, has laid a 12-in. line under the Miami River near Hamilton, Ohio, to improve gas service to the Hamilton area. Construction of the line, contracted by Shamrock Construction Company of Lansing, Michigan, involved blasting a 6 ft trench in the river bed for the line. The new line, together with 8-in. lines on both sides of the river, will terminate at the new West Hamilton city gate station.

Houston Natural Gas Company, Houston, Texas, has completed a new city gate station near Alvin and installed approximately 1000 ft of new 4-in. feeder main to the Alvin distribution system. In Houston, firm has completed installation of approximately 2900 ft of a 12-in. city loop, replacing pipe originally installed in 1928. In Corpus Christi, 2900 ft of 8-in. has been installed to improve deliveries to industrial customers.

Laclede Gas Company, St. Louis, Missouri, is progressing steadily on expansion work at its underground storage facility near Florissant. An 80 ft extension to the facility's compressor building — that will ultimately house three additional 880-hp compressors— has been completed. One compressor unit has been installed and will be in operation in December. Other additions include a 30 by 60 ft storage garage and a 25 by 30 ft addition to the station's office space, both now completed.



"Tilt-Cab" Maintenance and Construction Truck, new addition to Queen Street Section of Brooklyn Union Gas Company, has a specially designed steel body capable of carrying all necessary equipment for maintenance and construction work, including: Paving breaker, close-quarter drill, rammer, jackhammer, gas mask, gas indicators, and miscellaneous fittings and materials. For operation of pneumatic tools, truck is equipped with latest type 125 cu ft per min rotary compressor mounted crosswise on chassis within body of truck, directly behind cab. Short chassis with tilt-type cab over engine was selected because its short wheel base adds to ease of maneuverability on congested city streets.

The Gas Service Company, Kansas City, Missouri, is nearing completion on installation of 17,000 ft of 24-in. main in the Northeast Industrial District area of Kansas City, Missouri. New line will serve as an additional cross-town tie-in, linking company's western and eastern distribution areas, and provide greater flexibility of operations.

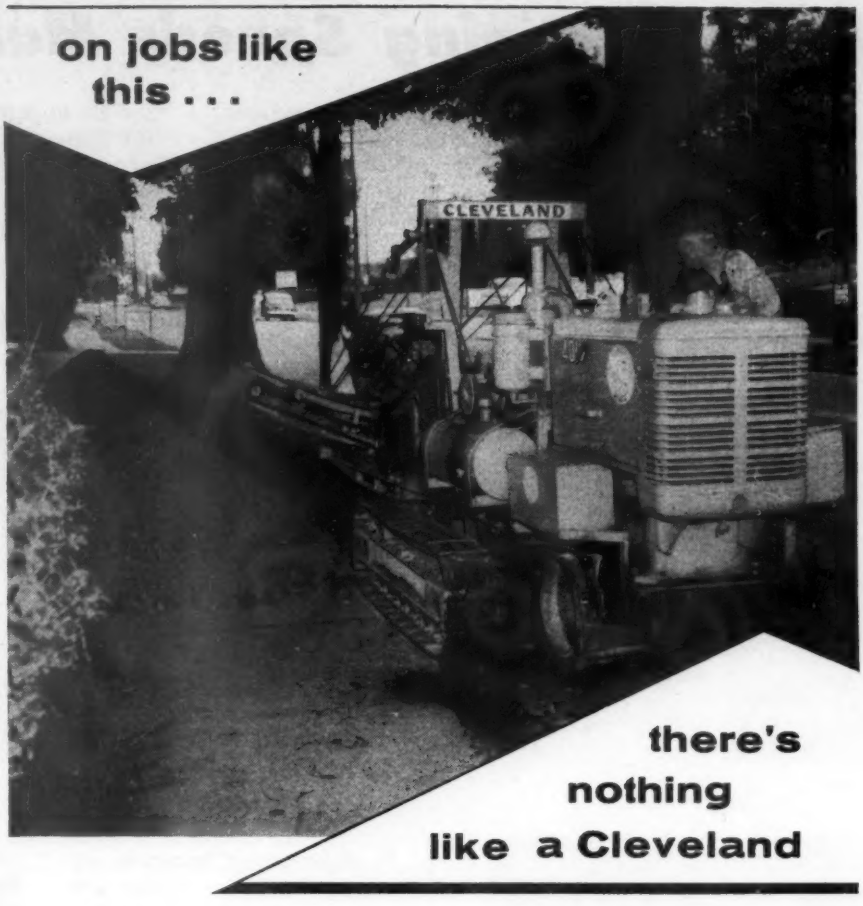
Ohio Fuel Gas Company, Columbus, Ohio, has several projects completed or nearing completion. In Huron, approximately 5000 ft of 8-in. main is being installed, along with a new city gate station. Burkhardt Construction Company is contractor. In Findlay, projects include some 25,000 ft of 2 to 6-in. mains in the West Park Addition in the southwestern area of the city, including a new regulator station and building. Don Miller is contractor on project. In Jackson, approximately 2500 ft of 8-in. line has been installed to bolster the distribution system in that city, with Ohio Pipeline Construction Company as contractor. At New Concord, work has been completed on some 5000 ft of new 5½-in. main, replacing a smaller line.

Worcester Gas Light Company, (Milford Division) Worcester, Massachusetts, is installing approximately 11,000 ft of transfer main through Milford to Hopedale at a cost of approximately $100,000. New line is designed to increase pressure and improve service to the Hopedale area, boosting ultimate delivery capacity by 10 times.

Lone Star Gas Company, Dallas, Texas, will construct a new city gate station on the west side of Abilene, designed to improve service in that area. Approximately 14½ miles of 12-in. line, is being laid by Lone Star's Transmission Department in the area to replace an existing line that now runs through a built-up area. The line being replaced will be absorbed into the Abilene distribution system.

Southern Counties Gas Company, Los Angeles, is remodeling its Santa Barbara Division operating base that includes a complete "facelifting" and expansion of open areas for storage and parking. When completed, the remodeled building will house a modern combination warehouse-office.

Peoples Gas System, West Coast Division, Tampa, Florida, is completing work on installation of approximately 40,000 ft of 2-in., 20,000 ft of 3-in., 10,000 ft of 4-in., and 10,000 ft of 6-in. mains and services in new subdivisions of Tampa, part of firm's continuing expansion program.



TIGHT QUARTERS, narrow tree lawns, digging lines crowded with trees, utility poles, tough roots, intersecting service lines—nothing digs trench like a Cleveland "Baby Digger" in conditions like these.

PRECISION TRENCHING is needed here—a digging job on which a "Baby Digger" has no equal. Note how precisely this Cleveland 92 is placing spoil on sidewalk—off the well-kept lawn. Backfilling will be fast, easy and damage-free. Cleveland's low ground bearing pressure and smooth, friction-free crawlers are also big advantages on jobs like this.

ONLY 4'6" WIDE over its crawlers, the maneuverable 92 digs easily past obstructions, maintains steady, high trench production. More than 30 usable wheel and crawler speed combinations give it the right combination of power and speed for digging all soils—in mud, frost, tree roots, shale or rocky ground.

If city trenching is your job, there's nothing like a "Baby Digger" for you.

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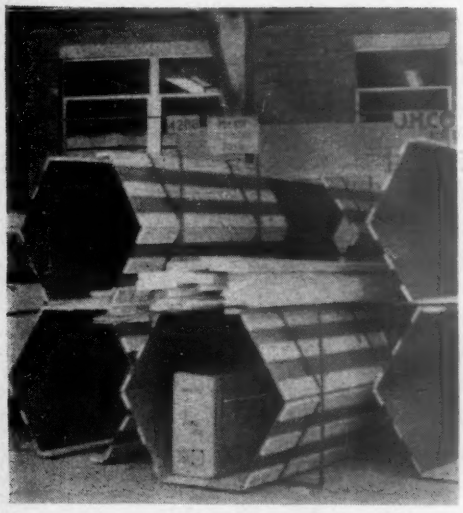
Good Everywhere ®

'Prefab' Piping Speeds Main Relocation

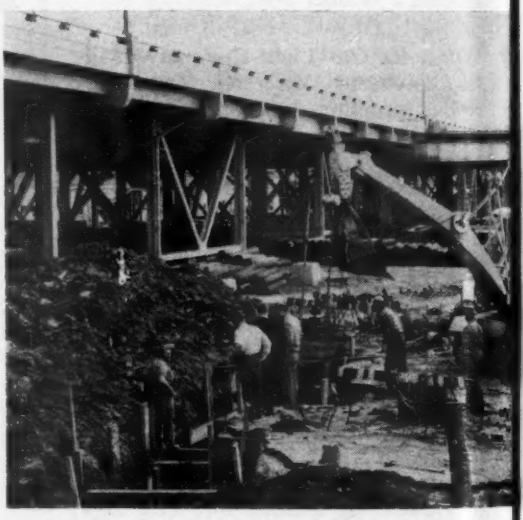
Construction of access ramps and interchange structures that will ultimately be a part of an expressway linked to a new bridge across the Mississippi River in New Orleans has meant relocation of gas distribution mains and facilities. One job in particular, involving an offset of 53 ft of 30-in. cast iron utilization pressure gas main at the Clairborne overpass was tackled with typical ingenuity by personnel of New Orleans Public Service's gas department.

1 **Offset piping** was prefabricated and wrapped in yard. Offset was necessary to make room for pier foundation footing of the interchange.

Straight section of the offset is loaded onto truck for delivery to the job site. Pre-planning of work allowed pre-fabrication of piping and reduced field work. **2**



3 **Prefabricated forms** for encasing the 30-in. piping with concrete, assembled by NOPSI's Shops Section, are stacked ready for delivery to jobsite.



Trench for offset is dug and shored up awaiting arrival of prefabricated sections. Offset begins at extreme right of photo, runs across to left around area for footing pier. **4**

5 **Last filler section** is put into place without incident. Job was "perfect fit" throughout. Tie-in of steel offset to cast iron main was made with dresser couplings.

Prefabricated casing shell forms were put in place and filled with concrete to provide a protective coating and additional weight for offset piping. **6**

Barber-Greene Model 774 Wheel Ditcher with new, simple hydraulic controls gives you more ditch per day. Write for new bulletin.

New hydraulic ditcher controls give more ditch under all conditions

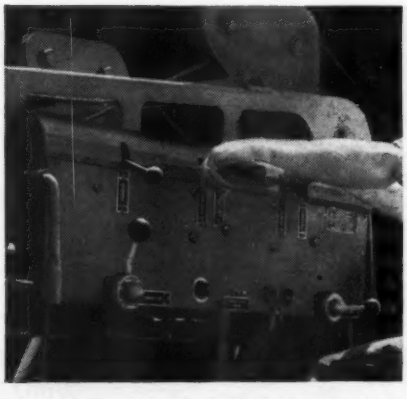
Simple hydraulic controls on the Barber-Greene Model 774 Wheel Ditcher and Model 784 Vertical Boom Ditcher give greatest accuracy, offer a new high in operating ease. The result is more ditch —and more profit—per day.

The entire control panel, with all controls within easy reach, results in less fatigue and greater comfort for the operator. Hydraulic brakes, controlled by convenient foot pedals, give easiest steering and greatly increased accuracy.

Exclusive Hydra-Crowd transmission allows instant selection of fastest crowding speed for every condition from infinite range available. Spoil conveyor speed infinitely variable, independent of wheel or bucket line and crowding speeds. All mechanical shifting in selecting speeds is eliminated. Electrically actuated overload release is set by simply turning a dial.

All these Barber-Greene Ditchers have advanced hydraulic controls:

Cross Country—Model 774 Wheel Ditcher, illustrated above.
City Work—Model 784 Vertical Boom Ditcher, convertible to wheel ditcher.
House Services—Model 705-B Runabout Ditcher, pneumatic tires.
New Mobility—Model 711 Inclined Boom Ditcher, truck-mounted.
Underground Cable—Model 702 Ditcher, Varidraulic transmission.



Operators learn to run these machines quickly and accurately . . . no complicated gear selections and fatiguing manual operations.

58-33-D

Write for literature on the ditcher line of advanced design.

Barber-Greene BG

AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

EYE CATCHER. Atlanta Gas Light Company's spectacular float in the WSB-TV 10th anniversary parade was viewed by an estimated 220,000 persons in Atlanta. Float featured AGL's sponsorship of "News of the World," oldest locally-sponsored show on the TV station, and prominently displayed the "Use Gas" theme. Float was also featured on front page of *The Atlanta Constitution* and in TV newsfilm about the parade.

BUY WORDS. New outdoor advertising "highway spectaculars" promote use of gas using permanent display structure and seasonal changes of sales messages. Gas company name is part of permanent display, uses glow-in-the-dark reflective materials. Seasonal displays are reproduced on reflective sheeting that also "glows" at night. Visible 24 hours a day, the new signs provide uniform roadside advertising display with localized impact of seasonal theme.

1959 CONSTRUCTION WILL SET NEW RECORDS in both contracts awarded and work put in place, according to the annual outlook statement of F. W. Dodge Corporation, construction news and marketing specialists. Contracts in 1959 for all types of construction will increase 3 percent over 1958's estimated $34.7 billion. Biggest upward push is expected in private projects, contrasted to 1958, where government-financed construction has helped spark recovery from recession. Largest single increase — 14 percent — is expected in new factory building contracts (as measured in floor area). Total public and private housing starts this year are estimated at 1,160,000; no change is indicated in this figure for 1959.

NEW CHAIRMAN OF THE BOARD of Trustees of the Institute of Gas Technology *E. H. Tollefson,* executive vice president of Consolidated Natural Gas Company. Seven trustees have been renamed to the board and six new trustees elected. *Lester T. Potter,* president, Lone Star Gas Company, and *Charles M. Sturkey,* president, Washington Natural Gas Company, have been elected to 3-year terms on the board. *Milton J. Pfeiffer,* vice president of gas operations, Cincinnati Gas and Electric Company; *Linn Bowman,* vice president of gas operations, Rochester Gas and Electric Corporation and *F. S. Cornell,* executive vice president, A. O. Smith Corporation have been elected to fill vacancies on the board which expire in 1959. *R. J. Rutherford,* president, Worcester (Massachusetts) Gas Light Company, has been elected to fill a vacancy on the board that expires in 1960.

CHESTER L. MAY OF DALLAS, TEXAS, nationally-known gas industry leader, has been elected chairman of the board of directors of Arkla Air Conditioning Corporation. He retired recently as senior vice president of Lone Star Gas Company, Dallas. At the same meeting, Arkla also elected *Robert K. Eskew,* of Evansville, Indiana, a vice president. Eskew, director of research, development, and engineering for Arkla, is a nationally-known pioneer in the development of "All-Year" gas air conditioning.

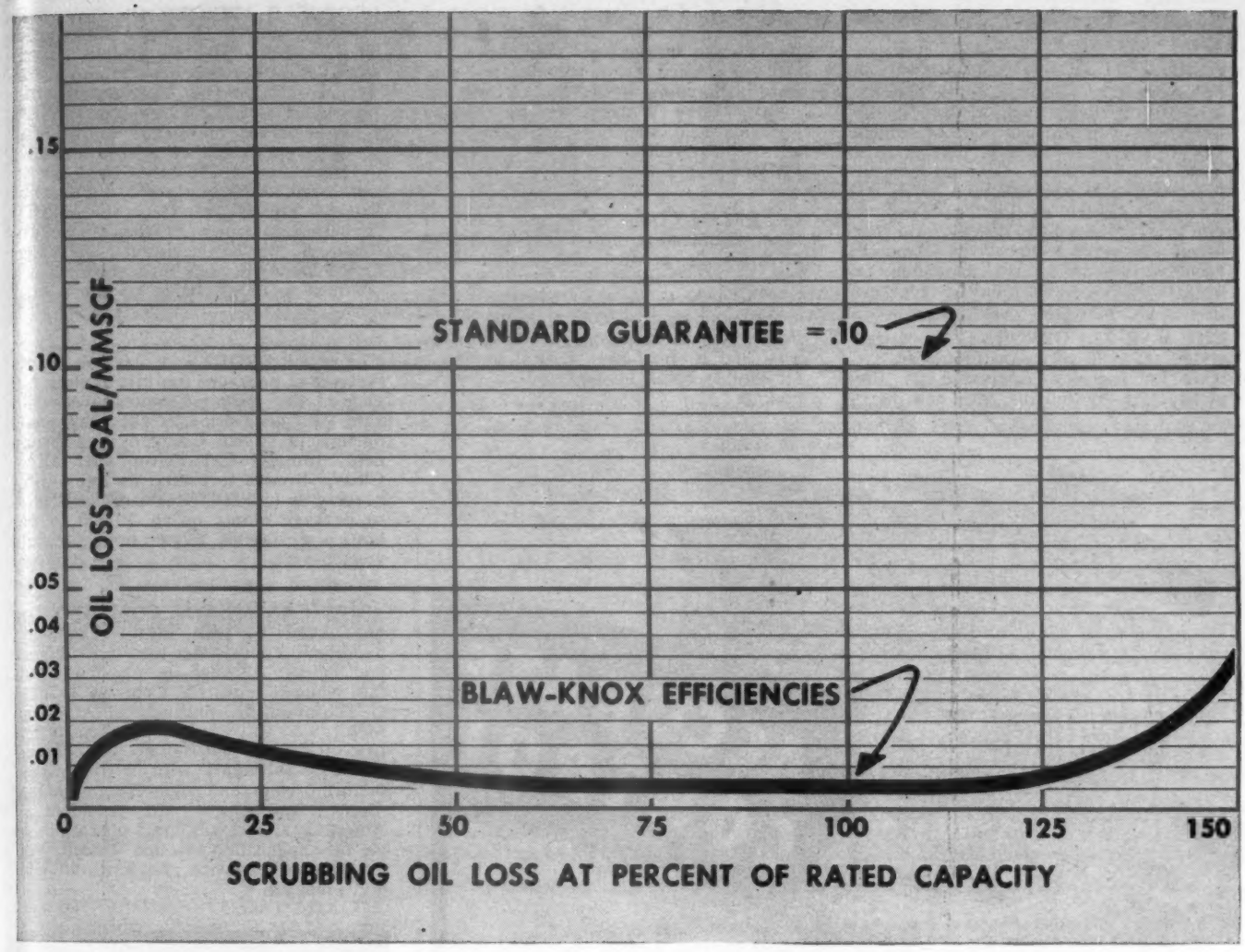
Have Goods, Will Travel. Ohio Fuel Gas Company's "Better Living Center," a complete, modern, all-gas kitchen on wheels, tours the company's service area, demonstrating to the public new and interesting ideas in kitchen styling using modern gas appliances. The mobile display features built-in range with table-top burners and in-the-wall oven, gas refrigerator, gas water heater, gas-fired incinerator, and automatic washer and gas clothes dryer. Gas lights are placed at entrance and exit of trailer when set up for display.

OHIO FUEL GAS COMPANY has won second place in the National Safety Council's 27th annual National Fleet Safety Contest. Company's combined truck and passenger car fleet of 1494 vehicles and 1600 drivers won honors in competition with nation's largest gas companies by achieving an outstanding accident rate of only 0.87 accidents per 100,000 miles of operation in the period from July 1957 through June 1958. More than 2000 companies participated in the contest. Combined average rate of accidents for all fleets was 1.34 accidents every 100,000 miles, lowest in the history of the contest.

EAST OHIO GAS COMPANY'S sales promotional efforts were featured recently by *Printers' Ink,* national sales and advertising trade magazine. Two-page spread pointed out utility's success in promotion of gas appliances, outlined company's campaign techniques, and explained their objectives as building an image of modernity around gas appliances and assisting the most active manufacturers in their sales efforts.

NORTH SHORE GAS COMPANY, Waukegan, Illinois, has won honors for the second best annual report of the "Gas Products Industry: Assets under $75 million" in the 18th Annual Survey of *Financial World,* national weekly magazine. Certificate of achievement will be presented C. E. Packman, secretary-treasurer of the gas utility, by the publication. Approximately 5000 reports originally were entered in the 1958 competition.

NEW PRESIDENT of the National LP-Gas Council is *W. F. (Frank) DeVoe,* manager of LP-gas sales for Phillips Petroleum Company. *Frank Carpenter,* president of United Petroleum Gas Company, Minneapolis, Minnesota, has been elected chairman of the executive committee, and *James F. Donnelly Sr.,* assistant to the executive vice president of A. O. Smith Corporation, Milwaukee, is new council treasurer.



Now you can compare gas cleaner efficiencies with accuracy

Laboratory and field tests prove that the new Blaw-Knox Gas Cleaner has the best efficiencies at the widest range of gas flow. Three hundred individual tests plus six weeks of actual on-the-line field operation have been tabulated. The remarkable results are shown graphically in this illustration.

Through the entire range of the new Blaw-Knox Gas Cleaner the scrubbing oil loss at rated capacities is less than .02 gallons per million standard cubic feet of gas.

Accurate efficiencies of gas cleaners should be known before the decision to buy is made. Judge gas cleaners not only on how completely foreign particles are removed (Blaw-Knox can do this down to less than one micron), but also on how oil-free the downstream gas actually is.

BLAW-KNOX

BLAW-KNOX COMPANY
Buflovak Equipment Division
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Trade Topics . . .

OPEN HOUSE—FINALLY. Polyken Division of The Kendall Company, manufacturer of plastic tape for pipe wrapping, held open house recently to dedicate a new polyethylene plastic tape plant at Franklin, Kentucky. Ground for the plant, one of 18 operated by Kendall, was broken in September 1956, and production began in April 1957; dedication ceremonies, however, were delayed 18 months because company "started expanding before completing initial building program."

THE HARCO CORPORATION, designers of cathodic corrosion protection systems for industry, celebrated its 10th anniversary by moving into new headquarters in Cleveland. New combined executive offices and manufacturing facilities are five times larger than those formerly occupied by the company, and include shipping docks and a railroad siding. Harry W. Hosford, Jr., Harco president, said company's unusually rapid growth has precipitated the extensive expansion program.

COLEMAN COMPANY has divided its sales organization into three marketing divisions by product classification and type of distribution. *Jess L. Moore, Jr.* will be general manager for the home heating and air conditioning group; *A. O. Beyer,* general manager for outing products, and *R. H. Lowe,* general manager for mobile home heating and air conditioning.

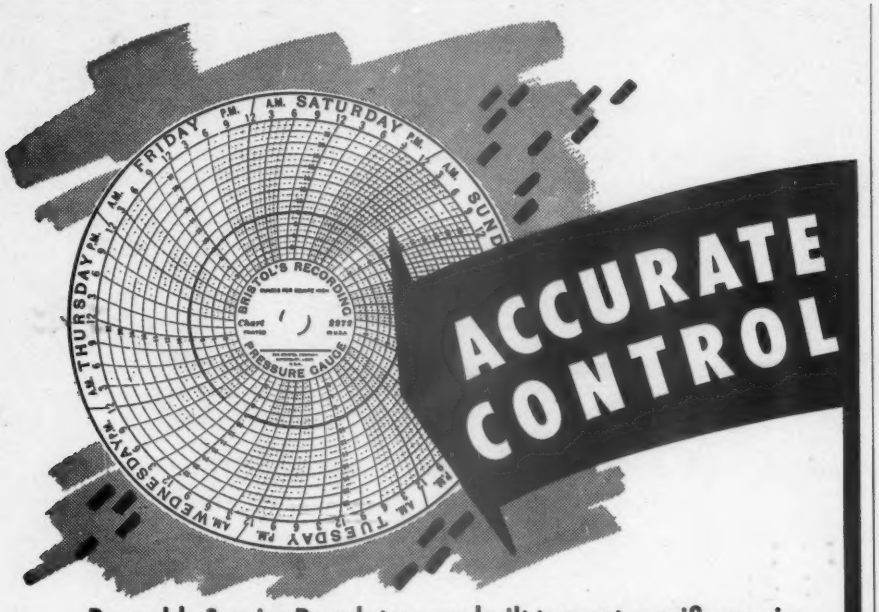
PROPOSED MERGER OF Ohio Brass Company and J. H. Holan Corporation would consolidate two established suppliers of utility products. Holan manufacturers truck bodies and truck mounted equipment for gas, electric power, and communication industries. Ohio Brass produces valves and a line of products for the electric power industry. Holan Corporation would be merged into The Ohio Brass Company with George L. Draffan becoming chairman of the board, and Roger A. Black, president. J. Howard Holan would become vice president and continue to be in charge of Holan business.

CLEAVER-BROOKS, a leading manufacturer of packaged fire-tube boilers, has entered the packaged water-tube boiler field with acquisition of the 68-year-old Springfield Boiler Company of Springfield, Illinois. Expansion will allow Cleaver-Brooks to extend its line — now ranging up to 20,000 lb steam per hour— to package plants up to 50,000 lb per hour and 300,000 lb per hour for field erected units.

AMERICAN METER COMPANY has purchased Buffalo Meter Company, manufacturers of water meters for homes and industry, through its subsidiary, Buffalo Niagara Industrial Controls, Inc. W. G. Hamilton, Jr., president of American Meter, who will serve as president of the new subsidiary, said Buffalo will be operated as a subsidiary with its own manufacturing, sales, and engineering organizations. Dante Broggi, vice president of American Meter, will direct operations of the new acquisition through Russell Wetjen, who will be vice president and general manager.

North Shore Gas Company (Waukegan, Illinois) is giving away "gold" coins bearing Handy Flame and a "Naturally It's Gas" slogan to mark its 50th anniversary. Company first presented coins to employees and visitors, and is now distributing coins as a remembrance to groups during company tours, and to customers called on by sales personnel.

ARKANSAS INDUSTRIAL PIPELINE CORPORATION has been formed as a wholly-owned subsidiary of Arkansas Louisiana Gas Company. The new firm, which will begin construction soon on a $15,000,000 project involving gas pipelines extending from one side of the state to the other, was conceived "with the idea of providing economic fuel to attract industry to the state of Arkansas" notes W. R. Stephens, ALG board chairman and president. "The Industrial Pipeline Corporation is established to take gas anywhere in Arkansas Louisiana Gas Company's territory or contiguous territories to serve industrial customers."



Reynolds Service Regulators are built to meet specific requirements — years of operation in the field through a complete range of operating conditions have proved not only their superiority but their durability. With parts so precisely machined for each model that they are completely interchangeable. The accuracy you require in performance is assured.

MODEL 10

Dead Weight or Spring Type, with or without Mercury Seal, or Dead Weight Safety Seal or diaphragm operated relief valve. All working parts are so accessible as to be interchangeable without removal from pipe line.

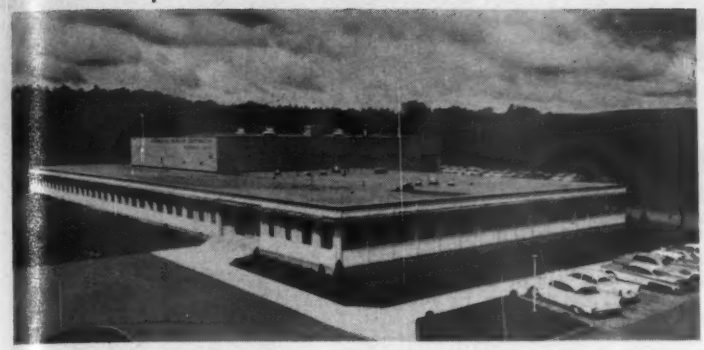
MODEL 20

Dead Weight or Spring Type, with or without Mercury Seal, or Dead Weight Safety Seal or diaphragm operated relief valve. All working parts are so accurate as to permit complete interchangeability in shop.

MODEL 30

For horizontal or vertical connections, with or without removable valve pocket. Available with either Spring or Dead Weight adjustment. With or without Mercury or Dead Weight Safety Seal or diaphragm operated relief valve.

Reynolds Gas Regulator Co.
ANDERSON, INDIANA, U. S. A.
GAS CONTROL SINCE 1892



Million-dollar engineering center, built by National-U.S. Radiator Corporation in Johnstown, Pennsylvania, will provide the firm flexibility in development and evaluation of new designs in heating and air conditioning equipment. The 40,000-sq-ft building, located in an 8-acre wooded section named "Research Park," is heated by a National-U.S. Series 66 gas-fired water boiler.

Extensive expansion program by Fisher Research Laboratory, Inc., at Palo Alto, California, has added 4000 sq ft of floor space to meet increased laboratory, administrative, and shipping needs. Research and development facilities have been doubled and modernized. Fisher manufactures pipe locators and leak detectors.

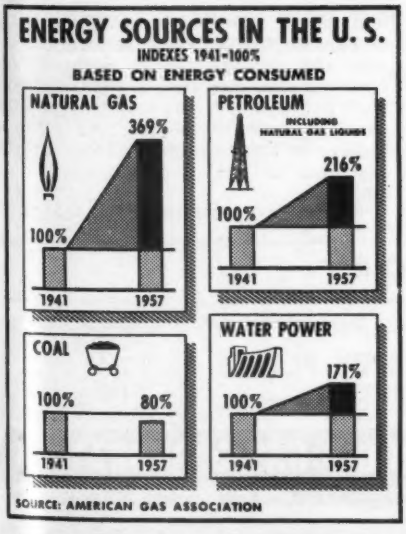
Facts 'n Figures . . .

CONTRACTS FOR FUTURE CONSTRUCTION in the U. S. in September increased 26 percent over September 1957, F. W. Dodge Corporation reported. Increase is greatest corresponding month jump reported in 1958. September marks third month in a row with an increase of more than 20 percent over last year, and fifth consecutive month in which dollar volume of contracts amounted to more than $3 billion. Residential building contracts in September were up 27 percent from the similar month of 1957 and covered 114,642 dwelling units. Trend toward smaller average size units, particularly apartments, is reflected in Dodge report.

FOR FIFTH CONSECUTIVE MONTH, October prices of natural gas common stocks set a new all-time high, climbing 31.0 percent above last October's prices and averaging $47.34 per share. Distribution company stocks closed the month at an average price of $35.51, a 38.7 percent increase over October prices last year. Stocks produced a current yield of 4.37 percent on an annual dividend payment of $1.56.

GAS RANGE SHIPMENTS SET TWO-YEAR MARK in October with 215,400 units shipped. Freestanding ranges accounted for 189,300 units of the largest monthly figure in two years, and were up 7.8 percent over October of last year. Built-ins hit an all-time monthly high, 31.2 percent ahead of October 1957. While September net new orders for **industrial furnaces** continued to climb — up 37 percent over August — the 9-month-total was still down 47 percent from the same period last year. In contrast, September shipments of gas-fired **furnaces and boilers for residential central heating** set all-time records, up 14.3 percent from the same month a year ago and topping the previous high set in September 1955. **Gas dryer** shipments in September were up 30 percent over August but were still 5 percent under September 1957. **Automatic gas water heater** shipments were up 7 percent over September year ago.

GAS UTILITY INDUSTRY AND PIPELINE SALES for year ending August 31 totaled 79.1 billion therms, a 5.2 percent increase over previous 12-month period. August sales were up 130 million therms from the preceding month, but down 0.6 percent from August a year ago. These increases are in contrast to the nation's industrial production, as measured by the Federal Reserve Board index, which was off 5.5 percent from August 1957.



Consumption of natural gas in the United States increased 7.1 percent last year to a record 10½ quadrillion Btu's. Natural gas accounted for 25 percent of the nation's total energy consumed in 1957 without including liquids extracted from natural gas. Although natural gas consumption last year was more than 3½ times as much as 16 years ago, proved reserves are at an all-time high.

the infra-red radiant heater that HEATS LIKE THE SUN

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Gas-fired Panelbloc Heaters are setting new standards of heating satisfaction. Panelblocs are low in first cost and are easily installed. No electrical connections are needed. There are no fans or blowers. No moving parts means long, quiet life.

Panelblocs have been installed in thousands of commercial and industrial buildings. They can heat the entire structure or any part of it.

Panelblocs heat objects and people—not the surrounding air.

Panelblocs are UL Listed and AGA approved. Any commercially available gas may be used—including LP. *WRITE FOR LITERATURE TODAY.*

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Gentlemen:
( ) Please rush literature on Panelbloc
( ) Have representative call
Name
Company
Address
City & State

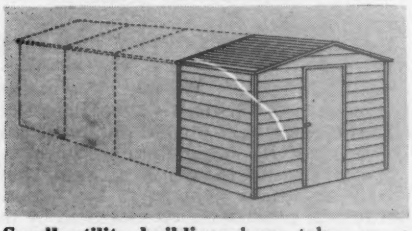
Product Previews

FOR THE GAS DISTRIBUTION INDUSTRY

For more information on items described here in brief, use the handy reply card and circle the corresponding numbers

"Stop-N-Go" fitting by Dresser Manufacturing serves both as a line cap and as an extension fitting for 2-in. gas mains. Fitting is used initially as a terminal fitting. Later, when main is extended, end nut and line cap are removed and the extension piping is stabbed into the fitting. End nut is tightened to complete joint. Only joining tool required is a wrench. Extensions can be made without shutting off main where pressures do not exceed 30 psi while extension is being made.

CIRCLE (3) ON THE REPLY CARD



Small utility buildings have taken on a new look. Childers Manufacturing Company is marketing a new small all-purpose building — a pre-cut, pre-punched clear-span structure with sheet steel roofing and siding of "step-down" design, adaptable to every conceivable need for small field-type shelters. Structures can be readily expanded in length as need arises by adding standard 6-ft sections. Shelters come in two widths—10 and 20-ft—and in lengths of 6 ft multiples.

CIRCLE (4) ON THE REPLY CARD

LINES WANTED — Factory representative covering Texas for a nationally-known line of heating equipment has the time for one or two other lines that can be sold through hardware or appliance distributors.

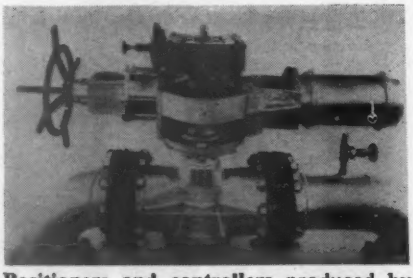
RAY S. McDONALD
3637 Hanover FO 8-6601 Dallas 25, Texas

Electronic computer optional equipment from Royal McBee Corporation includes a new auxiliary input-output system for the LPG-30 electronic computer. New equipment is designed for applications involving large quantities of data to be processed, and is available as a combination high-speed punched paper tape Reader and Punch, or as a Reader alone. Models operate on a photo-electric principle and are capable of reading punched paper tape at a rate of 200 characters a second.

CIRCLE (5) ON THE REPLY CARD

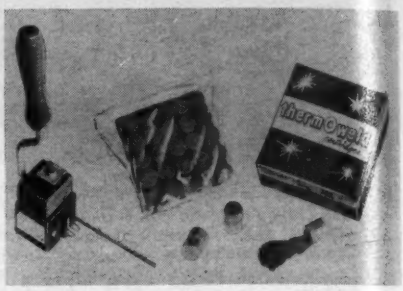
Snow scraper for gas holders made by Sauerman Brothers has a ¾-yd capacity. Designed to remove snow from large gas holders, unit is operated by a hoist mounted on a rotating turret located on a frame at the center of the holder.

CIRCLE (6) ON THE REPLY CARD



Positioners and controllers produced by Rockwell's subsidiary, Republic Flow Meters Company are now available for Rockwell-Nordstrom valve regulators. Introduction of Republic controls, which consist of an accurate (vector type) pressure controller and a feed-back type valve positioner, give the Nordstrom valve greater regulating sensitivity.

CIRCLE (7) ON THE REPLY CARD



Copper-thermite electrical connections provide simple inexpensive method of welding copper to copper, or copper to steel in cathodic protection installations. Introduced by Continental Industries, Thermoweld equipment makes connections that utilize high reaction temperature that takes place when powdered copper oxide and aluminum are ignited in graphite mold. When reaction takes place, superheated liquid copper flows over conductors in mold, forming a fusion weld between them. No outside source of power is required.

CIRCLE (8) ON THE REPLY CARD

UPVC fittings and flanges in 6-in. sizes and made of injection molded unplasticized polyvinyl chloride (UPVC), previously available only in ½-in. to 4-in. sizes, are now being produced by Tube Turns Plastics, Inc. New fittings and flanges make it possible to use corrosion-resistant UPVC piping in larger sizes at higher pressures than previously possible.

CIRCLE (9) ON THE REPLY CARD

New design in blowers and gas pumps introduced by Roots-Connersville utilizes basic Roots rotary positive principle, and includes major operating advantages for efficient handling of air and gas. New blower features vertical arrangement of impellers providing horizontal inlet and discharge connections for more convenient piping. Both blowers (Type RAS) and gas pumps (RGS) have identical volume and pressure ratings, with 36 sizes covering capacity range of 2000 to 14000 cu ft per min at 6 psig and 1500 to 8000 cu ft per min at 10 psig. All parts of blowers and gas pumps are identical with exception of gas pump bearing carrier and seal.

CIRCLE (10) ON THE REPLY CARD

PROFESSIONAL DIRECTORY

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NORMAC

Insulating **Fittings**

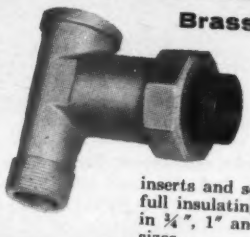
Malleable Service Ell

The insulating principle depicted above is carried out in all Normac Ells and Tees.

Malleable Couplings

Normac Insulating Malleable Couplings and fittings are available with polyethylene inserts and semi-insulating gaskets or full insulating rubber gaskets.

Brass Fittings



Normac insulating Brass compression end Tees, Ells and all compression end fittings are available with polyethylene inserts and semi-insulating or full insulating rubber gaskets in ¾", 1" and 1¼" iron pipe sizes.

New CATALOG

Write for your copy . . . it gives complete details and specifications of NORMAC equipment.

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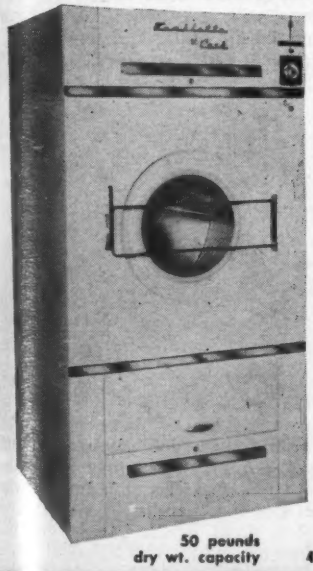

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- 2 YEAR WARRANTY on gear driven • friction free power transmission — Machine fully warranted one year.
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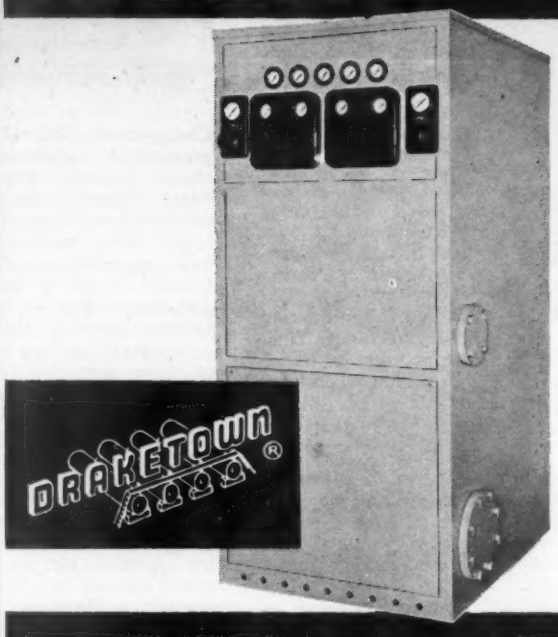

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A self-contained cabinet unit, MULTI-JET is available with manual or automatic controls. Requires very little maintenance.

An inquiry will show how simply you can insure *your* gas supply; there is no obligation.

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HOLLAND 123533

DRAKE & TOWNSEND

INCORPORATED

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Product Previews

Santa Claus Beware! Economical brick-finished chimney housing for gas vents has been developed by Metalbestos Division of William Wallace Company. The 16-in. square housings are produced in 3, 4, and 5 ft heights. Four galvanized steel panels with sliplock edges are delivered flat, can be assembled easily. Deluxe model comes in either red brick or buff brick finish; standard plain model may be painted any color. New UL-listed housings can be used with either Metalbestos Chimney or Metalbestos Gas vents.

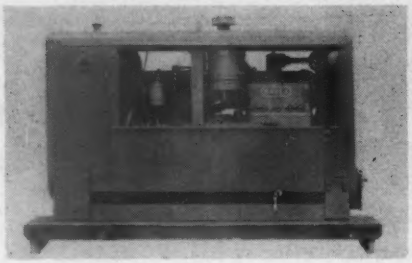
CIRCLE (11) ON THE REPLY CARD

Trac-wheels that feature simplified track design to reduce costs, greater track bridge strength and wear resistance, and a one-point lubrication system have been introduced by M. J. Crose Manufacturing Company. Trac-Wheels have been field proved by rugged usage on pipe coating kettles and pipe bending machines. They are available for manufacturers as initial installations of new equipment, or for field replacements.

CIRCLE (12) ON THE REPLY CARD

Plug-Protectors. Soft aluminum plugs for internal thread protection and as hole plugs are available in pipe sizes from ⅛ to 3-in. from Protector Products, Inc. Threaded holes can be protected in transit or in processing. Softness of metal guarantees thread will not be damaged as result of plug insertion or removal. Protectors can be used for temporary sealing of valve seats, tubes and tube fittings, and on meter and regulator inlets and outlet openings during painting and other finishing operations.

CIRCLE (13) ON THE REPLY CARD



Compressor. New 125 cfm Davey compressor for cross-mounting on motor trucks features compact weatherproof control panel mounted on the curb end of the compressor. Located adjacent to clutch lever and air outlets, panel permits one-man operation of the machine. Control panel is furnished as standard equipment without extra charge on all Davey skids for cross mounting.

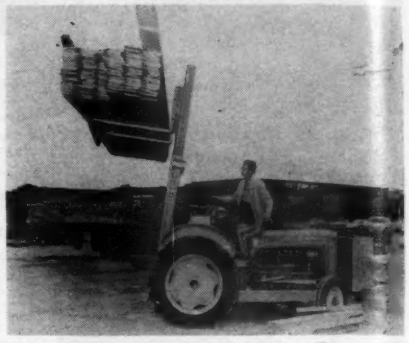
CIRCLE (14) ON THE REPLY CARD

Air-gas proportioning mixer for gas burners developed by Hauck Manufacturing incorporates exclusive design concept that provides adjustability of capacity without changing mixer parts. "Adjusta-Flow" mixer can be adjusted to burner nozzles and manifold piping without taking anything apart. Calculations and changing of jets, venturi, sleeves or rods are eliminated without sacrificing accuracy of air-gas mixing. Inverted iris cone can be expanded or reduced in diameter by means of external adjustment screw so that exact mixing pressure can be quickly set for correction of various burner nozzle coefficients. Adjustments are recessed for full protection.

CIRCLE (15) ON THE REPLY CARD

Dielectric Insulating Unions for Water Heaters. Patrol Valve Company has introduced two new packages for its dielectric insulating unions. Standard Series is packed 12 to a box, and the Heavy-Duty Series 6 to a box. Both are available in all-brass or in combination brass-galvanized, in a variety of sizes, with either threaded or sweat fittings. New line of steel-to-steel dielectric insulating unions for gas line connections on domestic water heaters has also been introduced by the company.

CIRCLE (16) ON THE REPLY CARD

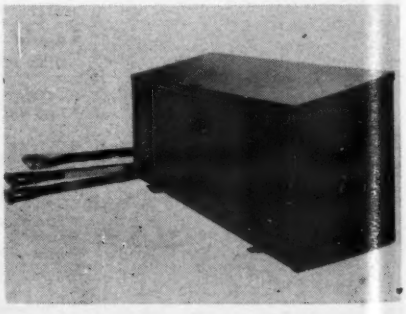


Tractor-Mounted Fork Lift. New Sherman fork lift can lift 4000 lb at 24-in. load center and 5000 lb at 15-in. load center, has lifting height of 12 ft 6 in., open channel ends to facilitate service of carriage and rollers without dissembling the mast. Tractor power steering is utilized with a special Sherman steering valve and linkage for improved maneuverability. Steering wheel and driver's seat are reversed so Fork Lift moves in opposite direction from normal tractor operation; this puts big rear wheels under load for extra lifting safety.

CIRCLE (17) ON THE REPLY CARD

Sump Pump for removing clean or dirty water, sewage, oil, sludge, and other fluids from excavations, ditches, manholes and other shallow operations has been developed by contractors tools division of Thor Power Tool Company. Pump weighs 35¾ lb, drains 200 gal a min., and is powered by a four-blade rotary air motor that runs with less than 50 cu ft a min of compressed air under full load.

CIRCLE (18) ON THE REPLY CARD



Job-Site Tool Chest. New steel tool chest stores tools, equipment, change of clothing and extra stock for job-site workmen. Steel slot for "handle" tools permits storage of 6 tools which cannot be removed when top is locked. Called Elmer's Tool Chest, unit is available in two sizes; weight is sufficient to discourage easy removal. Sloping top provides weather protection.

CIRCLE (19) ON THE REPLY CARD

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do it once — do it right!

with the

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FULL DETAILS AVAILABLE IMMEDIATELY

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Product Previews

Tapecoat has developed a new simplified type of terminal fitting for extending gas distribution systems featuring a fusible

sealing disc that assures positive flow when melted. Known as TC Terminal Fitting, unit advantages include safety—no gas leakage, no special equipment for installation, provides simple method of purging air from new lines, facilitates equalization of pressure before line is put in service and assures positive flow after fusible sealing disc is disintegrated.

CIRCLE (20) ON THE REPLY CARD

Conveyor Belt Does Double Duty. Quaker Rubber Division, H. K. Porter Company, Inc. has developed a unique type of conveyor belt construction that may be turned over after the first carrying side is no longer satisfactory and used again. It is a medium weight, double duty belt extremely flexible with a high impact resistance for use over smaller than usual pulleys on short center hauls. As named, the Shockmaster unit absorbs and distributes shock.

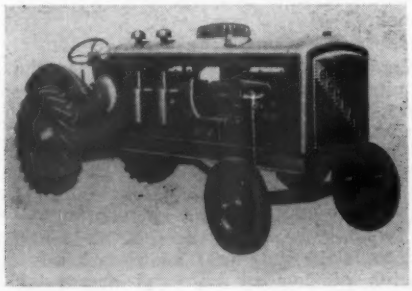
CIRCLE (21) ON THE REPLY CARD

Better traction and greater digging effort are featured in new 7000 lb carry capacity, 4-wheel-drive, rubber-tired tractor-shovel from Frank G. Hough Company. Available with new gasoline or diesel engines, 105 to 110 hp. Improved weight distribution plants an additional 1500 lb of weight on rear wheels for better traction and greater digging effort.

CIRCLE (22) ON THE REPLY CARD

Make quick accurate drawings in the field with new portable drawing board. Molded of high impact plastic, board weighs less than 8 oz. Comes complete with 2 transparent plastic triangles; 2 retractable metal straight edges that eliminate need for T-square, and 4 recessed spring-clips that hold standard 8½ by 11 sheets. No thumb tacks or scotch tape needed. Triangles clamp underneath board when not in use. Translucent board makes it easy to make tracings by holding against window or other lighted surface.

CIRCLE (23) ON THE REPLY CARD

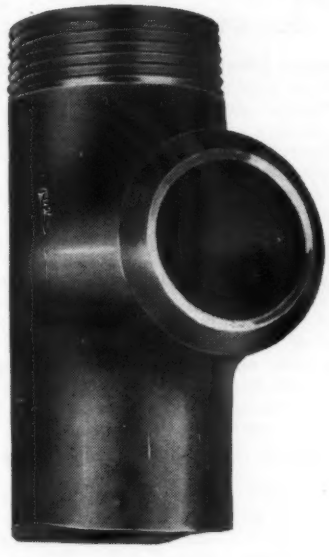


Self-Propelled Air Compressor. Schramm, Inc. has announced a new self-propelled air compressor in the 250 cfm class that is available with either gas or diesel power. Unit, furnishes 250 cfm of air at 100 psi; will operate 3 rock drills, or 6 paving breakers, or large drifter, wagon drill or self-contained mounted-on drifter. Unit can be furnished with a front-end winch for added moving power or pulling, a rotary brush for cleaning operations, or a snow plow blade.

CIRCLE (24) ON THE REPLY CARD

New
TAPPING TEE
FOR GAS MAINS
by Nibco

PART NO. 4911 - GS
Made from Schedule 40 ASTM A-106 A or B carbon steel



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Bulletin Board

NEW BOOKS...BROCHURES...CATALOGS

For more information on items described here in brief, use the handy reply card and circle the corresponding numbers

Safety booklet. Check-list booklet pointing out that "accidents don't just happen . . . they are caused by carelessness!" has been prepared by Southern Union Gas Company in conjunction with their accident prevention program. Booklet is to be used by schools, churches, and youth organizations in the communities they serve. Divided into four sections, booklet includes examples of advertisements, news articles, and other materials that will be used this year to alert the public to the need for practicing safety at home. Special emphasis is placed on dangers arising from misuse of natural gas.

CIRCLE (61) ON THE REPLY CARD

Process Instrument Catalog lists Fischer & Porter equipment that is available for quick shipment. Indicators, transmitters, recorders, and controllers for flow, pressure, temperature, density, viscosity, and consistency are covered in the 52-page catalog.

CIRCLE (62) ON THE REPLY CARD

Propane Diluter. New Selas bulletin describes "package units" that mix propane or butane with air to supply standby fuel and maintain heating, heat processing, and refrigerating operations, when regular gas supplies are temporarily curtailed. Unit provides simplified interchangeability without having to adjust appliances or gas burners; can be connected to existing gas piping eliminating need for dual piping, separate air blowers, and inspirator mixers; delivers gas-air mixtures at pressures sufficiently high to produce same heating rates as normally attained, and maintains constant pressures even when load variation is extreme. Drawing shows typical installation and details its automatic operation.

CIRCLE (63) ON THE REPLY CARD

"Flame Set" Cooking Control. Complete guide for servicing and installing Robertshaw-Fulton's new top burner thermostatic cooking control with "Flame Set" feature has just been published. New "Flame Set" feature allows adjustment of flame height to size and type of cooking utensil, and selection of proper cooking temperature. Single dial makes both settings.

CIRCLE (64) ON THE REPLY CARD

Tractor Catalog. International Harvester's line of new wheel tractors in 6 power sizes from 12 to 72.5 hp for commercial and industrial use are described in new 16-page catalog. Special features and specifications for each tractor are given.

CIRCLE (65) ON THE REPLY CARD

FREE . . . Distribution Data Sheet No. 2—Volume Flow Rate Table for Service Lines. Includes service line pipe sizes of ¾, 1, 1¼, 2, 3, and 4-in., giving rate of flow in cu ft per hour at pressure drops of 0.3 and 8.0 ounces. *Available to all readers using "ready-reply" card to obtain additional information on other items described in "Product Previews" and "Bulletin Board" departments of American Gas Journal.*

CIRCLE (1) ON THE REPLY CARD

Utility Tractors. Many uses of Allis-Chalmers recently announced D-14 and D-17 utility tractors are given in new 12-page 2-color illustrated booklet. Profitable ways to use the tractors, kind of work utility tractors can do efficiently such as ditching service lines, backfilling, material handling, etc., are illustrated in new booklet.

CIRCLE (66) ON THE REPLY CARD

BOOKSHELF

Survey of Residential Gas Service by County, *compiled by Bureau of Statistics, American Gas Association, 420 Lexington Avenue, New York 17, New York. Pages, 137. Price, $3.*

Book provides in detail for each county in the United States, the name and gas company providing service, characteristics of the gas distributed (including Btu value, specific gravity and pressure at the consumer's meter), the number of residential gas customers, estimated total families served by gas, and approximate saturations of gas ranges, water heaters, dryers, and heating equipment. A map showing which U. S. counties have utility gas service is also included. All data refer to October 31, 1957. Similar publication was last issued in 1953 and contains statistics relating to the previous fall.

Grounds Maintenance Handbook, *by Herbert S. Conover, published by F. W. Dodge Corporation, 119 West 40th Street, New York 18, New York. Pages, 503. Price, $10.75.*

First comprehensive guide for landscaping and maintenance of public, semi-public, industrial, and commercial grounds. Book covers virtually every aspect of grounds maintenance and development from original selection of land, through planting and seeding, to equipment and methods necessary to keep it in prime condition. Thoroughly indexed, book is valuable as quick-reference handbook.

Handbook of Degree-Day Data for the United States, *2 volumes, published by American Petroleum Institute, Department of Technical Services, 50 West 50th Street, New York 20, New York. Pages, 210, 188. Price, $7 for each volume.*

Volume I is an extensive statistical summary of degree-day information for a large number of locations in the United States, while Volume II contains a retabulation of detailed historical degree-day data for the various locations, as recorded by the U.S. Weather Bureau. The statistical summary was prepared by the API advisory committee on fundamental research on weather forecasting, from detailed data of Volume II. This summary presents normal degree-days for entire heating season and the remainder of the season starting from any month within the season. Presentation of degree-days which will occur at each location, both warmer and colder than normal, with specified probabilities, is important aid in determining possible daily fuel demands.

Infra-Red Heater Installations. Eight new case history studies covering application of Panelbloc Infra-Red Radiant heaters have been published by Thermobloc Division of Prat-Daniel Corporation. Some sheets have plan and installation drawings; all have photographs of installed equipment. Data contained in sheets has been accumulated over 2-year period.

CIRCLE (67) ON THE REPLY CARD

Gasclok Bulletin. Complete specifications and application details on American Meter's Gasclok Power Drive are given in new bulletin. The Gasclok Power Drive is a completely self-contained air or gas powered instrument drive and timing unit suited as either original or replacement equipment on all makes and types of recording instruments such as integrating orifice meters, gas lift meters, strip chart recorders and other conventional circular chart instruments.

CIRCLE (68) ON THE REPLY CARD

Catalysts Data Book. Data useful in evaluating course of many chemical reactions is given in a new edition of a 40-page booklet, "Physical and Thermodynamic Properties of Elements and Compounds," published by Girdler Catalysts, Chemical Products Division of Chemetron Corporation. Booklet includes listings of enthalpies and heat capacities of many common elements and compounds, equilibrium constants for several common reactions and information for computing equilibrium constants for other reactions.

CIRCLE (69) ON THE REPLY CARD

Analog-To-Digital Converter Data. Design information on a new device for shaft analog-to-digital conversion is given in new brochure from Data Instruments Division of Telecomputing Corporation. The 4-page, 2-color brochure shows typical pulse output waveforms and is illustrated with photographs and drawings of equipment and functions. Applications are described in terms of specific equipment.

CIRCLE (70) ON THE REPLY CARD

Boltless Steel Shelving. Description and illustrations of the 6 types of Penco's T line of boltless steel shelving are given in new 8-page, 2-color booklet. Companion shelving equipment such as drawer case units, service counters, tool storage racks, and shelving boxes are also covered in booklet.

CIRCLE (71) ON THE REPLY CARD

European Common Market. Description of origins, background, and potentialities of the European Common Market, Euratom, and the more complex Free Trade Area is set forth in new 16-page booklet from Ebasco Services. Prepared by A. R. Beardsley, manager of Ebasco's European Office in Milan, Italy, booklet gives an evaluation of common market developments based on press notices, special reports, and author's six years' experience as a management and marketing consultant in Europe.

CIRCLE (72) ON THE REPLY CARD

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